Medical Times

A Monthly Journal of Medicine, Surgery and the Collateral Sciences

Vol. XL., No. 9 **NEW YORK, SEPTEMBER, 1912** **Fifteen Cents a Copy One Dollar a Year**

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General Scientific

ARE TEA AND COFFEE HARMFUL?

Our forbears looked upon tea and coffee as harmless beverages which in Cowper's words were "the cups that cheer but not inebriate." The changes rung up by the mutations of time have caused a suspicion that our sires may have been wrong in their estimate of the harmlessness of these popular drinks. It was not so long ago that tea and coffee were urged as substitutes for alcoholic drinks, but the growing belief that beverages containing alkaloids may create considerable mischief has led to a change of front in this regard.

The question is as to the real harmfulness or harmlessness of tea and coffee to human beings. As is usual there is a divergence of opinion on the subject among medical men, although the majority seem to believe the two drinks are harmless when partaken of in moderation.

It will be well in studying the matter to consider the action of caffein, the principal alkaloid in both tea and coffee.

Prof. J. W. Mallet, of the University of Virginia, recently made an exhaustive series of experiments regarding the content of caffein and arrived at the following conclusions:

Black tea—hot, 1 cupful (=5 fl. oz.) contained	1.54	grains of caffein
Green tea—cold, 1 glassful (=8 fl. oz. exclusive of ice) contained	2.02	" " "
Coffee—with hot milk, 1 cupful (=5 fl. oz., 3/5 coffee, 2/5 milk) contained	2.61	" " "
Coffee—"black", 1 after dinner cupful (=2 fl. oz.) contained	1.74	" " "

If we accept the findings of this well known scientist as conclusive, the action of caffein will be interesting. J. D. Pilcher, in observing the action of the drug upon mammalian circulation, gives the report of his experiments in the *Cleveland Medical Journal:*

He found that therapeutic doses increase cardiac tone, the heart contracting to a greater degree in systole and relaxing less in diastole. The vasometer center is stimulated, but with vascular relaxation. Sometimes blood pressure is raised, but usually there is a more rapid flow.

Larger doses result in a decrease of cardiac tone, a marked vascular relaxation and a lowering of blood pressure. Excessive doses cause death by cardiac dilatation.

Pilcher expressed the belief that caffein may be helpful in small doses when the heart is dilated. Caffein acts on the peripheral vessels by preventing constrictor tone and not, as do choral and the nitrites, by dilating the vessels directly. The vessels of the spleen and the intestine react quite as readily as do those of the kidney. Too large doses cause an irregular pulse and the rate and depth of respiration are increased. Pilcher says that caffein has a prompter action than digitalis, but its influence is of shorter duration. He also found that caffein and alcohol in combination increased the toxicity of caffein, and while caffein might be helpful in mild intoxication, it is of no value in severe intoxication from alcohol.

Prof. H. L. Hollingsworth, of Barnard College, Columbia University, in his recently published book on "The Influence of Caffein on Mental and Motor Efficiency," practically proves that caffein increases the ability to work within certain limits, if adequate food and rest is provided, without in any way drawing upon the reserve energies of the body, this increased ability being due to an increased ease of work whereby the functions are performed more readily. In a long series of experiments he found that "small doses of caffein alkaloid (1 to 4 grains), taken either in the pure form or accompanied by small amounts of syrup, do not produce appreciable sleep disturbance except in a few individual cases. Doses larger than these (6 grains in the present experiment) induce marked sleep impairment with most subjects, though even here a few individuals show complete resistance to its effects. These effects are greatest when the dose is taken on an empty stomach or without food substance, and when it is taken on successive days. This latter fact may point toward a cumulative effect. The effect of the drug does not seem to depend on the age, sex or previous caffein habits."

Hollingsworth carried out his experiments by the aid of six assistants through the medium of sixteen male and female subjects, and observations were made for forty days. The subjects were divided into four squads and at the conclusion it was apparent from a careful study of the readings that with up to 4-grain doses there was no effect from the caffein. Larger doses caused nervousness, feverishness, headache, irritability and disturbance of sleep.

The report concludes by saying: "The subjects quite uniformly report improvement in health, spirits and general efficiency at the close of the experiment. This is perhaps due to the regular regime of life followed during the forty days. Those who had given up the use of caffeinic beverages during the experiment and for several days before its beginning do not report any craving for the drinks as such, but several expressed a feeling of annoyance at not having some sort of

a warm drink with breakfast. Two subjects report a gain in weight, two a loss, and the rest either report no change or are unable to state reliably.

The two chief factors which seem to modify the degree of the caffein influence, both with respect to performance in the various tests and to effect on sleep and general health, are *body weight* and *the conditions of administration of the dose* (time of day and presence or absence of food substance). The detailed results of a study of the quality and amount of sleep correlate closely with these indications as to general health."

H. C. Wood, Jr., professor of pharmacology in the Medico-Chirurgical College, in discussing "The Effects of Caffein on the Circulatory and Muscular Systems" (*Ther. Gaz.*, Jan. 15, 1912) sums up the results of his experimental observations by declaring that caffein "acts as a stimulant to the reflex centers in the spinal cord; it enables the muscle to contract more vigorously without producing a secondary depression, so that the sum total of muscular work which can be done by a man under caffein is greater than that which can be done without it. I cannot resist pointing out how confirmatory of this conclusion is the universal experience of mankind with caffein beverages (tea, coffee, etc.). The soldier under the influence of coffee not only walks more briskly at the beginning but finishes the day's march less weary."

Some physicians say that coffee poisoning is not infrequent. Be that as it may, tea poisoning is commonly recognized. The *Medical Record* (July 13) notes that this condition is more or less common in countries where tea imbibing is a custom. Among the English working class "the women often become addicted to the tea habit and not only drink to excess, sipping tea throughout the day, but drink it in such a state that the poisonous properties are most evident. The tea is in a stewed condition, the pot being kept on the stove the whole day. Men, too, who work at indoor trades and at trades which from their nature tend to create thirst, often become excessive tea drinkers.

"It is probable that in most cases of chronic tea poisoning the symptoms come on very gradually, but in the later stages increase rapidly. Discoloration of the skin is a not uncommon symptom, combined with dilatation of the colon and constipation. According to Weild (*Med. Press and Circ.*, May 15), this discoloration is due to some toxin arising from disturbances of digestion, and not to the direct action of any absorbed constituent of the tea, although doubtless the frequent flushing due to the tea greatly assists the action upon the skin. The pigment is not a deposit in the skin, but a product of the skin. Occasionally a patient will complain of polyuria, but there is only one pathognomonic sign of tea excess and this is not present in all cases: this sign is the odor of the breath. The smell is something like that of old books, musty. The cardiac symptoms are more akin to tobacco poisoning than to those of alcoholism, the symptoms of nervous derangement predominating over the signs of muscular degeneration. Injudicious indulgence in badly prepared tea is also the cause of much nervous atonic dyspepsia. According to Weild, for the majority of people, tea, properly prepared and taken in moderate quantities, is not only harmless but useful. Yet a glance at the pharmacology of two of the active ingredients of tea, caffein and tannin, will show that excess of either may be expected to produce a serious disturbance in health. The disturbance, although varying greatly in degree, is so consistent in form that tea poisoning should rarely be overlooked. As is the case with all foods and beverages, but to a greater extent than with many, care in preparation and moderation in consumption are essential in averting the evil effects of indulgence in tea."

"Tea tremens" is a recognized disease among Chinese tea tasters. They do not swallow the tea, but hold it in the mouth to get an idea of the aroma and then eject it. Despite this they become subject to violent nervous attacks, with attendant insomnia and at times marked hallucinations.

That our readers may have an opportunity of considering this important subject pro and con, we are glad to present the views of a number of well known physicians whom we asked to write briefly upon the topic: "Are Tea and Coffee Harmful?"

THE CUMULATIVE EFFECTS OF CAFFEIN.

G. Wilse Robinson, M. D.,
Professor of Nervous and Mental Diseases in the University Medical College.
Kansas City, Mo.

In order to properly discuss the subject of the cumulative effects of caffein, it is necessary to first establish the fact that it is cumulative. Zenetz found traces of caffein in the urine fifteen days after administration. William Salant and J. B. Rieger, of the Bureau of Chemistry, in their experiments instituted and carried out for the purpose of determining the comparative toxicity of caffein, determined that under normal conditions a small dose of caffein was eliminated within twenty-four hours. The time required for the elimination of larger doses was greater. They report that many of the animals died from the effects of the administration of several doses of equal size upon succeeding days, whereas one dose of corresponding size did not kill a similar animal. Prof. H. L. Hollingsworth, of Columbia University, by his experiments demonstrated most conclusively that the effects of caffein are cumulative.

In the experiments of Salant and Rieger it was found that small doses of caffein, one decigram per kilo of body weight, administered to rabbits on succeeding days, apparently caused no ill effects. Doses of medium size, 150 to 200 mg per kilo, if administered upon two succeeding days, did not cause any bad effects, but if the dose was repeated within twenty-four to forty-eight hours many of the rabbits died. They also found that moderately large doses, .1 to .3 gm per kilo, may be given on more than three successive days without causing death, in every case, but death usually resulted if more than two such doses were given. In some instances the rabbits died several days after the administration of the last dose.

The most marked symptoms manifested by the rabbits affected by the doses given was rapid emaciation, beginning three to eight days after the administration of the first dose. The duration of life of those dying varied from one to twenty days after the first dose. The autopsy findings varied chiefly in degree only. The characteristic lesions were an intense congestion with frequent ulceration of the gastro-intestinal mucosa, congestion of liver, spleen and cortex of kidneys.

Hollingsworth demonstrated that daily doses of one to four grains of caffein, representing the caffein strength of one-half to two cups of coffee, did not cause any appreciable alteration in the quantity or quality of sleep, but that daily doses of as much as six grains of caffein caused a considerable lessening of the quantity and modification of the quality of sleep, the sleep not being sound or refreshing. He observed that the effects were more marked when the dose was administered on successive days than when but one or two doses were given or when the dose was given on alternate days.

In large doses caffein acts as an acute poison to nerve and muscle tissue. It is the most active stimulant of the cerebral cortex, and an overdose may cause headache, delirium, tremor and restlessness, or convulsions and reflex irritability. Injected into the muscles it may cause a stiffening or rigor.

Caffein is used in coffee and tea as a beverage for its stimu-

lating effects. Even in small doses, one cup of coffee or tea per day, it acts as a stimulant to nerve and muscle tissue. The general results of the action of caffein upon the nervous system are to increase the reflex irritability of the cerebral cortex; mental functions primarily improve, ideas flow more rapidly, the threshold stimulus of all the senses is lowered, the sense of fatigue is lessened, wakefulness supervenes, and mental and physical inertia are dissipated. Under the influence of small or moderate doses of caffein, the muscles are enabled to contract more strongly and for a longer period of time without fatigue or rest. More mental and physical work can primarily be done under the stimulating influence of caffein than otherwise.

The secondary effects are not such as to encourage us in seeking help and aid in this manner. Caffein is not a food to nerve or muscle tissue, it does not increase the elimination of fatigue products, but does increase their production. In order to respond to the stimulation of regularly ingested doses of caffein, nerve and muscle tissue must draw upon their reserve energy, and they must do their work in the presence of an excessive quantity of toxic fatigue products, and both of these conditions tend to exhaustion and perversion of function. Ideation is more rapid but less accurate and the judgment is perverted. If caffein is used regularly there is a disturbance of gastro-intestinal function, depending upon the size and frequency of the dose. This disturbance of function results in a lowering of the body nutrition. This further tends to physical and mental exhaustion. One of the most important and serious effects of the regular use of caffein in considerable doses would be a neurasthenic state manifested by an irritable weakness of the nervous system. It should be recognized that no stimulant which disturbs digestion, over stimulates nerve and muscle tissue so that it is necssary for them to draw upon their reserve energy in order to perform the functions, can be taken over a long period of time without injurious effects, and especially is this true of a drug such as caffein which is eliminated so slowly from the system that some of the previous dose is present and active when the succeeding dose is taken.

DISCOURAGE INTEMPERATE USE OF TEA AND COFFEE.

HARVEY W. WILEY, M. D.,
Washington, D. C.

In my opinion caffein beverages are all harmful in varying degrees, depending upon the age and physical condition of the drinker, his idiosyncratic tendencies, varying widely in different cases, and the manner and quantity in which they are used. It is axiomatic to my mind that a stimulant acting upon the nervous system as caffein is admitted to do, produces abnormal activities of brain and muscle from which there must be a reaction, since no corresponding nutrition to make good the waste is provided. I have treated the matter fully in the September number of *Good Housekeeping Magazine*, and I am appending some abstracts from that article as it will appear:

"The effects of the excessive use of coffee, tea and other natural caffein beverages are well known. Although the caffein is combined in these beverages naturally, and they are as a rule taken at mealtime, which mitigates the effects of the caffein, they are recognized by everyone as tending to produce sleeplessness, and often indigestion, stomach disorders, and a condition which, for lack of a better term, is described as nervousness. It has been suggested that these effects are brought about by other constituents in tea and coffee than caffein, but the fact that when caffein is extracted from these bodies and administered in a pure state, similar phenomena are produced, shows that the evil effects noted are due particularly to the alkaloid caffein itself.

"There is quite universal agreement among experimenting hygienists and physicians that a stimulating effect on both muscle and brain action is produced by caffein, but there is a very wide difference of opinion among experts as to whether it is desirable to produce this effect. The almost universal use of these beverages shows, at least, that they do not produce very serious lesions. The combined effect, however, of caffein, nicotin and distilled alcohol has undoubtedly done much to produce the large number of neurotics found in the world to-day, and possibly may have some direct connection with the prevalence of nervous diseases, melancholia and insanity.

"The feeling of drowsiness after a full meal will be admitted, I believe, by almost everyone to be a natural condition incidental to the proper conduct of digestion. If we grant this as a postulate, then we are forced to admit that the use of tobacco, or coffee, or tea, or whisky, to such an extent as to drive away this natural feeling must be in interference with the normal conditions. A continued interference with normal conditions cannot be regarded as beneficial.

"While we may, and probably shall, continue to tolerate the use of coffee and tea without any serious effort to restrict it, except by the teaching of hygiene and sound sanitation, we ought not to close our eyes to the dangers of extending the use of caffein beyond those beverages in which it naturally occurs. In the commerce in caffein-producing plants there is a large amount of waste incident to manufacture and transportation, which is now utilized for the purpose of producing caffein in the form of a pure drug. Large quantities of the drug are manufactured in this and other countries from tea sweepings, that is, the residue of broken or scattered fragments of tea incident to its handling.

"Caffein has a legitimate place among therapeutic agents, and in combination (especially with citric acid) it is often prescribed by physicians. That it should be sold promiscuously, when added to beverages, is quite a different matter. Realizing the effects which it produces upon the nerves, and the further fact that it undergoes very little change in the body (that is, it is in no sense a food), its restriction to products in which it occurs naturally seems to be demanded by the sound laws of ethics and of hygiene. * * *

"The excessive drinking of tea and coffee is acknowledged to be injurious by practically all specialists. The effect of caffein when taken on an empty stomach is acknowledged by many investigators to be more prompt and more injurious than when a caffein beverage is taken with the meals, as tea and coffee usually are taken. The beverages to which caffein has been added are usually taken between meals and thus the effect produced is more marked.

"The beverages containing caffein do not, so far as I know, by any label or advertisement, indicate to the consumer the fact that caffein is present, and thus people who might, if they had their choice, refrain from drinking such beverages, are led to do so by reason of ignorance of their composition. Again, there is a distinct difference of opinion among eminent specialists concerning the effects of caffein upon health. In view of this disagreement, it is the duty of every one who has the public health at heart to discourage the intemperate use of tea and coffee, their use in any degree by children, and the use, by all, of beverages to which caffein has been added.

"The extraction of caffein from any of its natural sources and the use of it in beverages which by their name and by their manner of use give no suggestion of containing this product, appear to me to be an objectionable practice, irrespective of any opinion regarding the injurious qualities of this alkaloid. Any powerful drug, such as caffein is acknowledged to be, should not be offered indiscriminately to the public in other than its natural condition, and certainly not without the knowledge of the consumer.

"This is the road to safety. No injury can come to the public by failure to use these beverages—injury may come,

and often does, to those who do use them, especially to excess; and to the young, to those of nervous temperament, and to those who have idiosyncratic sensibilities toward drinks of this kind even when used in moderation."

TEA AND COFFEE ARE NOT INNOCUOUS.

Tom A. Williams, MB.CM., Edin.,
Corresp. Memb. Socs. of Neurol. and Psychol. of Paris. Memb. Amer. Psychopath. Assoc., etc. Neurologist to Epiphany Free Dispensary
Washington, D. C.

The toxic action of the caffein group of alkaloids is very decided in some individuals, but they are excreted so rapidly that most people fail to show signs with ordinary doses.

Their alterations of the psychological reactions were proved experimentally in Kraepelin's laboratory. Clinically, *psychasthenia* is the picture presented by caffein toxicosis. A feeling of dissatisfaction, with restless excitement, is the dominant one. A remarkable case was that which I presented to the Paris Psychological Society and later published in *Archives of Pediatrics*, 1910, of a girl aged two, who had been given coffee in her milk since the age of three months. The consequence was a state of weak excitement with mal-nutrition and arrested development on account of the coffee-craving creating a distaste for other food than that containing coffee. The child's condition was pitiable.

A few grains of caffein per day determined a severe psychasthenia in a woman who recovered promptly when it was suspended and relapsed on several occasions when it was given.

Susceptibility is sometimes very great, as in the case of a certain member of Congress who informs me that two strong cups of coffee will render him almost maniacal.

Such facts as these cannot be gainsaid, and render untenable the opinion which prevails, especially in Europe, that tea and coffee are quite innocuous.

Short of these measurable effects, close observation reveals minor discomforts which common experience attributes to tea and coffee. Headaches are often produced by them, for instance.

Of course, there is a special susceptibility of certain individuals. It is remarkable how large a proportion of the nervous people who consult me have previously learned to refrain from tea and coffee because of their experience that it aggravates their sufferings.

This special susceptibility extends to other nerve poisons. For instance, a bottle of light French wine per day is borne very easily by a vast majority of individuals, but this dose frequently causes peculiar conduct in those the French call dégéneres and was in one case found by Babinski to be the cause of a multiple neuritis, the source of which had baffled numerous physicians who had not dreamed that so ordinary an ingestion of alcohol could be a causative agent.

Perhaps the best test of the toxic effects of a nerve poison is the performance of such acts of skill as are demanded in games requiring activity. Even if no tremor is apparent, uncertainty or diminution of dexterity soon show themselves. In thinking, the same faults are observed, and are the cause of the psychasthenic feelings produced by alkaloids of the caffein group.

THE PERSONAL EQUATION A FACTOR.

Otto Juettner, M. D, F.R S M,
Secretary of the Cincinnati Polyclinic.
Cincinnati, O.

There is no doubt in my mind that the question in regard to the relative harmfulness of tea and coffee ought to be answered in the affirmative. Tea and coffee cannot be classified under the head of foods, because their food value is practically nil. They must, therefore, be considered poisons in the same sense in which all drugs are poisons. Any substance which does not serve as a physiological nutriment is a poison and, therefore, relatively harmful. In connection with coffee and tea it is a question of the degree of harmfulness, and this again depends on the susceptibility of the individual organism and the dose and frequency of administration of coffee or tea.

That the abuse of coffee is by far more frequent than its proper use, there seems to be no reasonable doubt. The symptoms produced by excessive indulgence in coffee can be observed in the arrested physical and mental development of children, their pallor, emaciation and nervousness; in the morbidly excited condition of women who are addicted to the coffee-pot just as the toper is to the whiskey bottle, and no less a helpless and pitiable victim than he; in professional men and students who dispel the sense of fatigue and drowsiness and whip up their mental faculties by coffee; in the aged, whose tremor and itch are not infrequently due to excessive indulgence in coffee.

It is impossible to fix the exact dose which is toxic, because the criterion is contained in the personal equation of the individual patient. Coffee-poisoning in its chronic form may be the etiological factor of tremor of the muscles of the hands, the face, and especially the tongue, cramps of the lower limbs, especially during the night; of terrible dreams, of ringing, roaring and buzzing in the ears; of acid eructations, nausea and vomiting, of severe continuous headaches, frequently at night; creeping, tingling, pricking sensations in the skin; perversions of the sense of touch, sensations of heat and cold, hysterical attacks, troubles of vision, dizziness, insomnia, great mental agitation, all kinds of digestive disturbances, nervous symptoms and anxiety in the chest. Coffee depresses the kidney function. The skin symptoms are probably due to irritation from retained waste.

The food value of coffee is, as already indicated, very doubtful. The use of coffee should be regulated by the same rules that underlie the use of liquor of any kind. It is worthy of notice that the symptoms of coffee-poisoning persist for weeks after the use of coffee has been discontinued. The treatment consists in the enforcement of a non-stimulating, largely liquid diet, fruit and liberal draughts of water, long continued warm baths to quiet the nervous system and keep the skin active, and physical and mental rest. In all cases of so-called neurasthenia, the coffee-drinking of the patient should be inquired into. What has been said about coffee holds also good in regard to tea.

In conclusion let me repeat, while an occasional indulgence in coffee and tea is not objectionable, the coffee or tea habit is decidedly pathologic. Patients who cannot get along without tea or coffee, but feel uncomfortable and even sick when deprived of these stimulants, illustrate the harmfulness of the latter. Such patients are, to all intents and purposes, drug fiends and should be classified with habitués of tobacco, alcohol, opium and other toxic agents.

Outlining the Thyroid.

M. S. Woodbury, Clifton Springs, N. Y. (*J. A. M. A.*, June 1), considering the frequency of dysthyroidism and the difficulties sometimes encountered in diagnosing enlargement and outlining the gland, describes a method which he has used for this purpose. Having observed moderate thyroid enlargement made more prominent by strong extension of the neck, he concluded at first that this position should be used in this examination, and studied to work out the problem of outlining it. It is rather surprising to an inexperienced person to find how completely the normal thyroid is hidden beneath the sternomastoids, and he goes into some detail as to how the difficulty thus produced can be overcome. By rotating the chin over the opposite shoulder he brought out the gland from under the sternomastoid and enabled the lower lobe to be outlined. The most satisfactory position for examination of the upper pole of the thyroid was moderate flexion of the neck without rotation. He believes that the thyroid gland can be measured with a fair degree of accuracy in a great majority of, if not all, cases. It has a feel which distinguishes it from the other structures and the movements of the gland on swallowing are helps.

EXCESS CAUSES INJURY.

C. J. Douglas, M. D.,
Superintendent of the Douglas Sanatorium.
Dorchester, Mass.

Tea and coffee are injurious under the same conditions that other drugs are injurious, i. e., when they are used in excess. All agree that excess in anything is harmful, but in determining what is excess, different answers will be given. One bibulous gentleman gave this rule: "When I get down and can't get up I know I have had enough." Most people who drink tea or coffee in enormous quantities will be sure they are not using these drugs in excess. They do not distinguish the difference between drugs and food in their effect on the system. There is no substitute for an enslaving drug. When the effect of one dose has worn off, another dose of the same drug must be taken or discomfort follows, but if nutrition is wanted, a hundred different foods will supply the demand with equally satisfactory results. Caffein and thein are enslaving drugs if taken in sufficient quantities. Tea and coffee are never taken because of any small nutritive element they may contain. Some drink them in small quantities merely because the taste is agreeable, or to wash down solid food. In many such cases the drug effect is negligible. On the other hand, if a sufficient quantity is habitually taken, so that when they are discontinued uncomfortable symptoms follow, then it is evident that a drug addiction has been formed. If, for example, a patient habitually drinks so much coffee for breakfast that on omitting it he "misses something" during the forenoon, he may be set down as an excessive coffee drinker. He is relying on the drug stimulation of caffein, and the daily use of any drug for such a purpose is injurious.

ARE TEA AND COFFEE HARMFUL?

Joseph M. Aikin, M. D.,
Secretary of the Nebraska State Medical Association.
Omaha, Neb.

The question should read, "Are tea and coffee beneficial?" It is not what may I take into my system with impunity, but what may I use with benefit to my physical and mental health and good citizenship. Tea and coffee are not in any sense food, therefore cannot add constructive tissue to our bodies. The caffein and thein in them are cerebral stimulants, and the tannic acid is an astringent affecting especially the muscular fibers in the intestinal walls. They are useful as a medicine, but not as food. If used as beverages they become a detriment to the user in direct ratio to the amount ingested and the resisting powers of nerve cells of the individual to withstand repeated stimulation and relaxation. That they are habit forming drinks is abundantly evidenced by the many headaches or other cerebral complaints by persons who for any cause "missed their accustomed cup of coffee or tea." Any substance that is not wholly a food, or that contains destructive in excess of constructive elements for tissue building, is harmful. Tea and coffee inebriety is known in America and its ratio is increasing more rapidly than our native born population.

NO ILL EFFECTS OBSERVED.

F. H. Barnes, M. D.,
Superintendent of Dr. Barnes' Sanitarium.
Stamford, Conn.

I do not believe tea and coffee are harmful if used in reasonable quantities. Of course I can see that the inordinate use of either of these beverages is harmful. On the other hand I do not believe that they cause nearly as much trouble as we are led to believe, nor can I remember any case where they have been the cause of a neurosis or a psychosis. I am pleased to see that The Medical Times is trying to get the truth in these various matters of public interest. It is my personal opinion that we have too many extremists and alarmists in the medical profession and among the laity as well.

STIMULATES AT EXPENSE OF TISSUE.

Solomon Solis Cohen, M. D.,
Professor of Clinical Medicine in Jefferson Medical College.
Philadelphia.

There is not the slightest doubt that caffein, thein, etc., are harmful, except when prescribed for definite purposes in the treatment of the sick. They are comparable to opium in this respect—not as to effect, or degree of harm—but that they induce a habit and should be avoided as self-prescriptions. On the other hand their effect in relieving fatigue is marked; and if a man has the control to keep his habitual coffee drinking down to one cup of moderately weak coffee, diluted one-half with hot milk, in the morning, and one-half cup of black coffee —but a weak decoction—after dinner, he may escape serious harm.

You cannot get "something for nothing," however, in biology or anywhere else. Coffee elicits a greater discharge of energy, but furnishes none; therefore it stimulates at the expense of tissue. It permits one to work when he ought to rest—and in the long run he pays with compound interest for the borrowed strength.

DANGERS LARGELY EXAGGERATED.

Frederick W. Seward, M. D.,
Goshen, N. Y.
Interpines

In my opinion water is the only *harmless* beverage for mankind. Tea and coffee I believe to have a pathological effect, as tobacco and alcohol have, upon the human organism, but in a much milder degree. Fortunately our organism can become accustomed to a degree of abuse, and as we generally use tea and coffee I believe the harm exerted by them to be almost negative. In other words the harmfulness lies in the abuse rather than in the moderate use of these articles. My experience with respect to their antidotal effect upon a homeopathic remedy has taught me that the danger has been very largely exaggerated and in a majority of instances I have found it less detrimental to my patient and less obstructive to recovery if the ordinary use of these beverages was continued and the remedy administered at the same time.

TEA AND COFFEE ARE POISONOUS DRUGS.

J. H. Kellogg, M. D.
Superintendent of The Battle Creek Sanitarium.
Battle Creek, Mich.

"Are tea and coffee harmful?" Yes, most decidedly so. Tea and coffee are poisonous drugs. The caffein they contain is of the same nature as uric acid. An ordinary cup of coffee contains nearly twice as much uric acid, or its equivalent, as the same amount of urine.

Both tea and coffee impair digestion and produce various disorders of the nerves, and are the cause of, or lead to, arteriosclerosis, or hardening of the arteries, among the results of which are Bright's disease, heart failure, apoplexy and premature old age. The mischief done by tea and coffee is exceeded only by the harm caused by alcohol and tobacco.

Tea and coffee are baneful drugs and their sale and use ought to be prohibited by law.

HARMLESS TO THE MAJORITY.

E. E. Maxey, M. D.,
Secretary and Treasurer of the Idaho State Medical Association.
Boise, Idaho.

Tea and coffee are harmful to the few, but to the great majority of users they are quite harmless. I consider tea worse than coffee, if deleterious results follow the use of either of these national beverages, but I do not ascribe any serious consequences to their judicious employment.

ADVERTISEMENTS CAUSE PREJUDICES.

CHARLES D. LOCKWOOD, M. D.,
Pasadena, Cal.

Tea and coffee are harmless to the vast majority of healthy people when used in moderation; that is, a cup of coffee for breakfast and a small afterdinner cup, with one or two cups of moderately strong tea at other times. There are a few individuals who have a strong susceptibility to both tea and coffee and even a small quantity will act as a poison to such persons. Most of the prejudices and fear existing in people's minds with reference to tea and coffee have been created by shrewdly worded advertisements of fake substitutes.

CAFFEINE A CAUSE OF NEPHRITIS.

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Tea and coffee are decided cerebral stimulants and are irritating and their use to excess produces functional nervous symptoms. I have thought that the excessive use of coffee has been an etiological factor in several cases of nephritis.

IODIN.

Its Sources, Preparation, and Uses in Medicine, Surgery, and Dentistry.

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Definition: Iodin, known in Latin as Iodum, is a solid non-metallic chemical element obtained from the ashes of sea-weeds and from native iodides and iodates.

Historical: It was discovered in 1812 by Courtois, a soda manufacturer of Paris and its properties were first investigated by Gay Lussac in 1813. William Usher first discovered it in the United States in the water of the Congress Springs, Saratoga, N. Y., and it was first employed as a medicine in 1819 by Coindet, Sr., of Geneva.

Sources: Iodin is found very largely in nature; particularly in deep water sea-weeds, and most abundantly in the species known as *laminaria*. Among fresh water plants it is found in water hemlock, brooklime and water cress. Small amounts are found in Honduras sarsaparilla and in the ashes of tobacco, while in Germany it has been found in the beet root. Macadam detected it in beans, peas, barley, wheat, oats and potatoes. It is found in the sponge, the oyster, cod-liver-oil, eggs and various polypi. A trace has been found in water used for domestic purposes, while minute quantities have been found in sea-water. Certain salt springs contain it. It is found in zinc ore, in rock salt, also in several domestic animals and in man. Vast quantities are obtained in South America from the mother liquors of the so-called Chili salt petre, or native sodium nitrate.

Commercial Preparation: Iodin is more extensively employed in its elementary state than any other element, both internally and externally. It was formerly derived solely from the ashes of sea-plants. These ashes are known as kelp on the coast of Scotland, where at one time the chief iodin manufactories were located. They contain iodin in the form of alkali iodides. After the sea-weeds have been collected and burned, the ashes are washed with water, the soluble constituents are dissolved, the larger quantities of sodium chloride and sodium and potassium carbonates are removed by evaporation and crystallization, and from the remaining mother liquor iodin is obtained by treating the liquor with manganese dioxide and sulphuric or hydrochloric acid, after which the mixture is heated. The liberated iodin distills and is collected in cooled receivers.

Properties: Iodin is a soft, friable, opaque substance, occurring in crystalline scales with a semi-metallic lustre and of a bluish-black color. It has a sharp, hot, acrid taste, distinctive odor and neutral reaction. It is heavy and dry and occurs in rhombic plates, prisms or octahedrons. Its specific gravity is 4.948. It is soluble in about 5000 parts of water at 25° C. (77° F.), and more soluble in water containing salts, for instance, potassium iodide. It is soluble in ten parts of alcohol at 25° C. (77° F.), and is freely soluble in carbon disulphide, ether, chloroform, glycerin, and in glacial acetic acid. It volatilizes slowly in small quantities at ordinary temperatures. It fuses and is gradually dissipated in the form of a purple vapor leaving no residue when heated to 114° C. (237.2° F.). It boils at 180° C. (356° F.), being converted into beautiful purple-violet vapors. When it comes in contact with cool surfaces, it condenses in brilliant, steel-gray crystals. Iodin imparts a deep brown evanescent stain to the skin, and slowly destroys vegetable odors. When taken internally it acts as an irritant poison. If inhaled mixed with air, it excites cough and irritates the nostrils. Iodin is closely related chemically to bromine and chlorine, and forms with oxygen one oxide, iodic oxide; and two acids, iodic and periodic; and with hydrogen, a gaseous acid, called hydriodic acid.

Impurities: The U. S. Pharmacopœia requires 99% purity for iodin, which is volumetrically determined by N-10 sodium thiosulphate solution. It also demands the absence of iodin cyanide, which is a very poisonous compound, and limits the amount of chlorin and bromin. Kelp contains on an average 1-224th part of iodin. It is lixiviated with water, in which about half dissolves. Iodin is said to be occasionally adulterated with mineral coal, charcoal, iron, calcium chloride, plumbago and black manganese oxide. These are easily detected by their fixed nature, while pure iodin is wholly volatilized by heat. Moisture is sometimes present. A solution of iodin in chloroform should be perfectly clear and limpid.

Incompatibility: Incompatible with iodin are: alkaline earths, alkalies, alkaloids, chloral hydrate, ferrous salts, hypophosphites, hyposulphites, mercurous salts, metals, oils, starch and tannic acid. Explosive compounds may be formed with ammonia and oil of turpentine. Tincture of iodin is incompatible with aqueous solutions. In the so-called "colorless solution of iodin" the iodin is replaced by iodide.

Tests: (1) By adding mucilage of starch to free iodin a dark-blue color is produced, due to the formation of "blue starch iodide." This color fades upon the application of heat. Sometimes in mineral waters the proportion of iodin is so minute that the starch test, in connection with nitric acid, gives a doubtful coloration. In such cases Liebig recommends the addition to the water of a very small quantity of potassium iodate, followed by a little starch and hydrochloric acid. (2) Violet vapors of iodin are evolved when strong sulphuric acid is added.

Physiological Action: (a) External. The actions of iodin applied externally are powerfully disinfectant and irritant. The latter action is most important. Iodin applied to the skin produces a yellowish-brown stain, which can be removed by sodium hyposulphite or an alkali. At the same time it causes a sensation of heat, burning and itching; dilatation of the vessels, some œdematous swelling and exudation of leucocytes, to which its energetic absorbent action is partly due. There often is an accumulation of fluid under the epidermis forming a vesicle. Mucous membranes are especially sensitive to its irritant action. Injections beneath the skin or into serous sacs excite intense pain and severe inflammatory reaction. Preparations of iodin are rarely used strong enough to produce more powerful irritation than this. The external application of them probably reflexly contracts the vessels of the subjacent organs, and this may explain their use as counter irritants. If they are too strong the irritation set up by them will proceed to the formation of pustules and deep inflammation with scarring. They usually destroy the superficial cuticle, so that after the use of them the skin peels. Iodin may be absorbed from the skin, and the alkalies of the blood serum lead to the

formation of sodium iodide and sodium iodate. The latter undergo double decomposition when they meet an acid. Thus free iodin is formed in the stomach and kidneys, and so if iodin has been applied in too large an area we get gastro-intestinal irritation and vomiting.

(b) Internal. The same may happen if it is taken by mouth, and it may cause precisely the same symptoms of iodism as potassium iodide. When taken internally, it is rapidly absorbed in the form of iodides and soon reappears in all the secretions of the body. The bulk of it is eliminated in the urine, also in the form of iodides. In medicinal doses iodin exerts the same influence as potassium iodide, and if given continuously induces all the phenomena of iodism. Single large doses produce gastro-enteritis, respiratory failure and collapse. Anuria and albuminuria have also been observed.

Therapeutics: Iodin is used as a disinfectant, antiseptic, alterative, deodorizer, irritant-caustic, parasiticide, absorbent, and a strong solution, as the liniment, is frequently used as a rubefacient and counter-irritant.

Toxicology: The symptoms of *acute poisoning* by iodin are those of acute gastro-enteritis with thirst, severe pain in the esophagus, stomach and abdomen, accompanied by violent vomiting and purging: the vomited matter containing iodin. An early symptom is the persistent, strong, metallic taste in the mouth, and markedly increased salivation. The pulse becomes rapid, running and feeble, the face deathly pale and later cyanosed. Anuria, acne and coldness of the skin are present. Giddiness, faintness and convulsions are not uncommon. Death occurs by failure of respiration, which is accompanied by loss of all vital power.

Chronic poisoning or iodism. The earliest signs of this state are shown by a peculiar metallic taste in the mouth, particularly before breakfast, slight tenderness of the teeth and gums, an increase of salivary secretion, a little morning nausea and lack of appetite for breakfast. There are usually a frontal headache, lacrymation, running at the nose, sneezing, sore throat, and later an acneiform eruption on the skin. More rarely there may be parotitis, disordered digestion, malaise and emaciation. The acneiform eruption later becoming pustular and bleb-like, goes on to active suppuration. Rarely there may be cardiac palpitation, sweating and loss of weight. Sometimes large boils appear, or purpura hemorrhagica comes on. In other cases the nervous system chiefly suffers. Twitching of muscles, neuralgic pains in the trunk and extremities, wasting of the testicles, mammæ, and other tissues occur, as the result of trophic disturbances. Anemia amounting to an actual cachexia is commonly produced. Loss of vision and paralysis may ensue in extreme cases.

Treatment of Acute Poisoning: The treatment of acute poisoning by free iodin consists in evacuating the stomach with emetics, administering starch or starchy foods (flour or arrow root), as antidotes. Opium and demulcents may also be given. The respiration and circulation should be maintained by hypodermic injections of alcohol, strychnin, digitalis or ammonia.

Preparations: One solid and two liquid preparations containing iodin in a free state are recognized in the Pharmacœpia, namely: an alcoholic solution designated as tincture of iodin, an aqueous solution known as Lugol's solution, and an ointment. Three other liquid preparations are used: Churchill's iodin caustic, Churchill's tincture of iodin and decolorized tincture of iodin (containing, not free iodin, but an iodid).

There is probably no drug which is so widely used in medicine, surgery, gynecology and dentistry as iodin, and there is perhaps no remedy that has a wider field of usefulness. As a counter-irritant it has in some cases been superseded by other measures. Its uses in surgery and gynecology are firmly established and I shall endeavor to describe in this paper the technique of its uses, particularly in sterilization of the skin.

Uses in Medicine: In chronic tonsillitis applications of iodin and iron are of service in the milder cases. The parenchymatous injection of a few minims of the tincture has caused a resolution of enlarged tonsils. Locally, iodin is used by inhalation, in catarrh, coryza and hay fever. The tincture may also be used as an inhalation with signal benefit in the four following instances: (a) In chronic forms of phthisis when the expectoration is abundant with the cough troublesome. (b) In children, 6 to 10 years of age, after measles, on exposure to cold and some wheezing in the chest. (c) In epidemics of diphtheria. (d) In itching of the nose, or of the inner canthus of the eyes, sneezing or weeping of the eyes.

It has been recommended for the relief of scrofulodermata, lupus and psoriasis. The tincture is especially useful as a local application in certain forms of seborrhœa. In chronic ozœna, a nasal douche may be used which consists of a solution of common salt containing a few drops of the tincture. Iodin and its compound potassium iodide are largely used in syphilitic disorders of the skin. In acute Bright's disease, vomiting may be relieved by drop doses. An ointment containing iodin is occasionally followed by good results in scleroderma. Rothe advises the use of a combination of iodin and carbolic acid in pertussis. Good results in empyema and chronic pleurisy have followed its use. One method is to inject the tincture undiluted into the serous cavity after the removal of the fluid, another to use daily the following solution as an irrigating fluid; six grains of iodin, with six grains of iodide of potassium, and one pint of water. The liniment applied to the chest as a counter-irritant in chronic pleurisy is used to promote the absorption of the fluid accumulated in the pleura. When the effusion has taken place iodin producing slight counter-irritation appears useful in the later stages.

The tincture has been employed to prevent the pitting in small-pox. Rockhill of Cincinnati used a ten per cent iodin and ninety per cent. glycerin mixture painted over the pustules of small-pox during the past year with very satisfactory results. It dries the pustule, causes the absorption of the toxin and arrests the destruction of tissue, thus preventing the usual disfigurement. It shortened the duration of the hospital stay, from twenty-five or thirty days under the old treatment, to eight to fifteen days. The pustules on the face were opened with a sterile instrument and touched up with tincture of iodin. He treated 85 patients with this method with one hundred per cent recoveries.

In combination with oil of wood tar iodin has been recommended for tinea tonsurans and either the ointment, liniment or tincture will remove herpes circinatus. The tincture has been used in malaria, and a solution of iodin is used to prevent the spread of erysipelas. Mario treated forty cases successfully by iodin painting. His technique was as follows: A sterilized swab is dipped in fresh tincture of iodin (ten to twelve per cent alcoholic solution) and lightly painted over the surrounding healthy skin, then another swab is similarly dipped and painted over the erysipelatous area, and the whole bound up with sterilized wool. The painting should be quite lightly done, and may be repeated five or six times a day.

The hypodermic injection of the tincture of iodin in five to fifteen or more minims into the substance of the goitre is now much used in the treatment of exophthalmic goitre. It should be used in simple hypertrophy but never in cystic enlargement of the gland. Medical opinion seems to be divided as to the results. The liniment may be painted on any part of the chest affected with pleurodynic pains. The inhalation of iodin and turpentine is recommended in laryngeal and pulmonary tuberculosis when the expectoration is profuse. In pleuritic pains in tuberculosis the side may be painted with the tincture.

Croftan says that for vomiting in uremia, the patient may be given from one to three drops of the tincture in ice water or in a few ounces of cold milk. In chronic bronchial catarrh liniment painted over the chest often affords relief. The lini-

ment is also frequently used to paint joints affected with chronic rheumatism and chronic gout, and over sore muscles in muscular rheumatism.

Uses in Gynecology and Obstetrics: Iodin is frequently injected into ovarian tumors after tapping and the tincture is applied to the uterine cavity in various forms of endometritis.

Painting with iodin as a means of sterilization of the skin prior to operation has now become a regular procedure. This method is now applied successfully to the vagina prior to vaginal operations. By aid of two specula the vaginal walls are held apart and thoroughly swabbed with ether, and then with tincture of iodin. The cervix is included in the operation. Care must be taken not to leave any iodin in the vagina. The results are said to be much superior to the ordinary methods of douching.

Reynes in *Progrès Médical* writes that iodin fumigations give excellent results in all uterine affections which may be treated per vaginam, like ulcerous metritis of the cervix, cervicitis, or granulomatous metritis. It is also useful for the disintegration of uterine cancers, after scraping the superficial layers of the tumor. Iodin vapors may also be introduced directly into the uterus. He also employs this treatment with success in cases of postabortal metritis. The technique is very simple and is as follows: After carefully swabbing the vagina and cervix he introduces into the vagina a small pledget of cotton wool dipped in iodoform, which has been passed in the flame of a spirit lamp, candle or match. The combustion of the cotton wool is instantaneous, and the heat of this combustion is sufficient to set iodin free, so that iodin vapors fill the vagina which has been previously dilated with a speculum. A deposit of iodin soon takes place in the vagina and on the cervix. This method does not require any special apparatus.

Douches containing iodin have been used in obstetrics to overcome septic infection. It has been stated that the vomiting of pregnancy has sometimes been arrested by brushing the cervix and lower part of the cervical canal with a mixture of equal parts of iodin, potassium iodide, alcohol and water. It is also stated that drop doses of the tincture will sometimes allay this condition.

The New York Lying-In Hospital uses the following technique in gynecological cases and in the preparation of the skin of the abdominal wall: The patient is given a dry shave before operation and then equal parts of the tincture of iodin and alcohol are applied to the site of operation. They consider this one of the most essential parts in the technique, for if the skin is allowed to become moist the iodin will not penetrate. They have used this method of sterilization of the skin in a very large number of cases without any infections which could be traced to this technique. It is simple, giving the patient very much more comfort, and is easily employed. Some of the surgeons there have also painted the external genitals in labor cases with iodin just before the delivery of the head, but this did not seem to meet with general approval among them.

The New York Post Graduate Hospital uses the following routine in preparing for vaginal operations: "The night before the operation the pudendum is shaved, scrubbed with sterile water and green soap, washed with ninety-five per cent alcohol, and finally a vaginal douche of one to five thousand bichloride of mercury is given. After the anesthetic is given, the vagina is swabbed with ninety-five per cent alcohol, wiped dry with sterile compresses and a two and one-half per cent tincture of iodin is applied to vagina and external genitalia. In emergency work the first part of the preparation is omitted and the patient is prepared while on the operating table with the ninety-five per cent alcohol, and two and one-half per cent tincture of iodin."

Uses in Surgery: Iodin is used to paint over joints affected with chronic synovitis. If the liniment is applied so as to produce vesication around a bubo or an abscess, it considerably reduces inflammation. In hydrocele iodin in solution, generally the tincture, is perhaps the best fluid to inject into the serous cavity surrounding the testicle after evacuation of the contents of the sac. Occasionally the tincture is injected undiluted. Iodin is useful in glandular tumors and has been injected into spina bifida with varying results. An ointment containing iodin is occasionally followed by good results in the treatment of keloids. Boils and carbuncles may be checked by painting iodin freely upon a neighboring vascular area. Russian physicians have employed it with marked advantage in hemorrhoids.

In the treatment of surgical tuberculosis, Wolf reports two cases in which the benefit from local application of a ten per cent tincture was strikingly apparent. In the enlargement of lymph glands, iodin is one of the best remedies we possess. In chilblains an application of the ointment gives relief if diluted with an equal amount of lard.

Koenig calls attention to the method he has used for six or seven years in the treatment of divers affections of the middle ear (chronic otitis, sclerous otitis, etc.), and which gives an iodin fumigation in a very simple manner by using pure iodin, the vapors being obtained and carried along by a current of warm air, which adds its effect to the therapeutic action of the iodin. In chronic suppuration and in certain forms of sclerosis of the middle ear, the results are quite appreciable.

Payr in writing of iodin sterilization states that he has used iodin in sterilizing the open abdomen for the last three years, painting the mucosa of the stomach and intestines with it when it was exposed in the course of a laparotomy, and he has been much impressed with the advantages of the method and lack of by-effects. He believes that it is a most valuable aid in resection of the stomach or intestine. The mucosa is first wiped dry and then painted once or several times with the tincture of iodin. The irritation therefrom seems to be a powerful stimulus for the local healing process. Examination of the field of operation later has shown always faultless healing. The course of the cases in which the iodin had been applied always seemed shorter and more favorable than in those without.

Blanchard says "the ideal paste for flooding tuberculous sinuses and filling pus cavities must be non-toxic and absorbable." He offers the following formula for a sinus flooding paste, and he says it meets every requirement, and is entirely innocuous. Formula: white wax, one part; vaselin, eight parts; mix while boiling. Iodin may be added in badly infected cases. Iodin scales can be reduced to a powder by the addition of twenty per cent of potassium iodid. One, two or more grains may be put in a small cup. The usual glass syringe should be filled with the hot paste. Half the contents of the syringe must now be injected into the cup and the nozzle of the syringe used to mix the iodin powder into the hot paste. When this mixture is drawn into the syringe the fresh iodin is rather unevenly distributed in the hot paste and it is ready to use. Immediately after injecting the sinus a thick pad of gauze saturated with alcohol should be bound over the opening. The evaporation of the alcohol cools and hardens the paste and prevents its escape. The results in over 150 cases of old tuberculous sinuses flooded with the wax-vaselin-iodin paste showed about thirty-five per cent cured by from one to eight treatments. Thirty per cent were cured in a year, and about thirty-five per cent remained unimproved.

Brüning has been applying Grossich's technique for sterilizing the field of operation with iodin for several years with complete satisfaction, using a ten per cent solution. Küttner recently stated that the results were equally good with a five per cent solution, and Brüning changed to this strength. Within a week, however, severe pyemia developed in an operative case and, discouraged, he returned to his old technique with which he had never had any experience of the kind.

Sabbatini regards the superior advantages of tincture of iodin for sterilization of the skin as established now beyond question. He writes that its one drawback is that sometimes there may

be some irritation of the skin from its use, and he here announces that this can be effectually prevented by removing at once any excess of the iodin after it has accomplished its purpose. Sodium hyposulphite transforms the iodin into a harmless salt while the hyposulphite is entirely free from any irritating or toxic action. He uses it in a five per cent tepid solution with which he swabs the skin five or ten minutes after it has been painted with the tincture of iodin and the latter has done all that is expected from it. After swabbing with the hyposulphite solution, he covers the field with a layer of cotton, lightly pressed down to be removed in two minutes. The skin is then sterilized, all the iodin not needed has disappeared, and with it nearly all the discoloration from the iodin.

The following method for sterilizing the skin is now in use at St. Luke's Hospital, New York City. For the past three years the surgeons there have been using iodin sterilization in practically all cases except those on the scrotum or other very tender places. On their regular cases, they have the patients shaved the night before operation and no other preparation is made until they come to the operating room, when one coat of a seven per cent tincture of iodin is painted over the skin area. In emergency cases the skin is shaved dry as it is very important that no water be applied to the skin for some time before the application of the iodin. After the operation the excess of iodin is removed with ninety-five per cent alcohol to avoid the irritation of the skin.

At the Presbyterian Hospital, New York City, the iodin preparation is used on all emergency cases, on hernias, and operations in the neighborhood of inguinal hernias. The part is given a dry shave and the patient is sent to the etherizing room. Here a coat of iodin is painted over the area to be prepared, and after a few seconds it is toned down to a lemon-yellow color with alcohol. Dr. McBurney, the house surgeon, says that burns at the edges of the prepared area under the towels have occurred, and to prevent this they are now careful to go over with alcohol all the surface including those hidden edges. Although it has been claimed that the iodin should be allowed to dry for several minutes before the alcohol is applied, they have not found this necessary and have had very few infections.

Uses in Dentistry: In dentistry iodin is used as a deodorant, an antiseptic and an anodyne. The tincture is useful to remove the tartar from the teeth, and to stimulate the gums when they begin to recede, leaving the teeth exposed and more liable to decay. In old persons or those in middle life, retraction of the gums from the teeth occasionally comes on, and Stillé recommends for this disorder the use, by means of a camel's hair brush, of a watery solution of iodin of the strength of one grain to the ounce, to be followed at once by a thorough rinsing of the mouth with pure water.

An iodin gargle made with two to four drachms of the tincture to eight ounces of water has been recommended to allay mercurial salivation. Tincture of iodin evaporated to one-fourth its volume is called dental tincture of iodin. Locally applied it acts as a stimulant, irritant or caustic, depending upon the concentration of the solution. It is used as a counter-irritant in cases of pulpitis and acute pericementitis and to resolve indurations about the teeth due to chronic inflammation of the pericementum. Used in pulp chambers it quickly deodorizes the putrescent pulp. If the cavity be washed with ammonia water afterward, any iodin-stain is removed and the dentine whitened. It is used diluted in conditions of tumid gums, and as a stimulant application to deep pyorrhoea. The liquor iodi compositus is preferable in such cases.

Bibliography.

1—Alcock. An Address on Iodine as the Sole Dressing for Operation Wounds. *British Medical Journal*, Feb. 3, 1912.

2—Brüning. The Technic of Iodin Sterilization of Field of Operation. *Zentralblatt für Chirurgie*, Leipsic, May, 11, 1912.

3—Budde and Hoffman. Tincture of Iodine-Catgut. *Deutsche Medizinische Wochenschrift*. March 28, 1912.

4—Burchard. A Text-book of Dental Pathology and Therapeutics.

5—Blanchard. The Passing of Bismuth Paste. *Medical Record*, May 18, 1912.

6—Capps. The Relative Advantages of Organic and Inorganic Iodin Preparations. *Journal of the A. M. A.*, June 1, 1912.

7—Cohen, Solis. Non-Surgical Treatment of Exophthalmic Goitre. *Boston Medical and Surgical Journal*, July 11, 1912, p. 59.

8—Gordon. Iodine and the Iodides in the Treatment of Exophthalmic Goitre. *Medical Record*, June 15, 1912.

9—Hoffmann. Painting the Peritoneum with Iodin in Tuberculous Peritonitis. *Journal of the A. M. A.*, April 13, 1912.

10—Koenig. Iodin Fumigation. *New York Medical Journal*, March 2, 1912.

11—Marine. The Anatomic and Physiologic Effect of Iodin on the Thyroid of Exophthalmic Goitre. *Journal of the A. M. A.*, June 1, 1912.

12—Mario. Treatment of Erysipelas with Tincture of Iodine. *St. Paul Medical Journal*, Aug., 1911.

13—Payr. Advantages of Tincture of Iodin for Sterilization after the Abdomen is Opened. *Zentralblatt für Chirurgie*, March 23, 1912.

14—Pickenbach. Tincture of Iodin for Sterilization of the Skin. *Medizinische Klinik*, Berlin, March 24, 1912.

15—Sabbatini. Improved Technic for Iodin Sterilization of the Skin. *Gazetta degli Ospedali e delle Clinische*, Milan, May 14, 1912.

16—Wolf. Iodin Treatment of Surgical Tuberculosis. *Zentralblatt für Chirurgie*, Leipsic. March 16, 1912.

SOME CLINICAL ASPECTS OF INTESTINAL OBSTRUCTION.

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Among the many various emergencies which confront the physician or surgeon, few, if any, demand better judgment in diagnosis or more prompt and radical measures of relief than obstruction of the bowel. Fortunate is he, of any considerable experience, who has not to regret the coming into his hands of some such case at too late an hour, a failure on his own part to recognize the real nature of the condition, or any unnecessary temporizing in the matter of treatment and consequent delay in resorting to what is, in the great majority of cases, the only effective procedure—surgical intervention.

These considerations seem to justify the recording of any and all experiences which may possibly have a bearing on this vital subject and the emphasizing of such lessons as they may suggest.

A series of such cases, fifteen in number, have occurred in the writer's practice within the past two years, and form the incentive to this contribution. They will be cited with as much brevity as possible and an attempt made to deduce some practical observations therefrom.

Case I. Mrs. R. S., aged 43, married, attacked suddenly in early morning by abdominal pain, without fever. At midnight, when I saw her in consultation, pulse and temperature were still normal, pain intermittent, vomiting infrequent, and non-stercoraceous, tympanitis slight; abdominal mass, about 5 by 7 inches, situated at level of umbilicus and somewhat transverse in extent; tumor solid in feel and percussion note indefinite. Removed to North Hudson Hospital and operated 36 hours after onset of symptoms. Temperature at that time 102°; pulse 100; abdomen sufficiently distended to somewhat mask the tumor. Abdominal incision revealed an extensive intussusception of ileum which was easily reduced. Six feet of small intestine was gangrenous and was resected, Murphy button being used. The peritoneal cavity contained a large amount of foul smelling sero-pus but was closed without drainage after thorough irrigation. Bowels moved on third day; recovery uneventful, and patient left hospital in three weeks. The button was passed in six weeks. Two months after the first attack obstruction recurred. The patient was returned to the hospital and operated upon immediately. Extensive adhesions were found and separated, no resection being required. Re-

covery smooth and complete except for breaking down of fat in incision. No further obstruction and patient in perfect health now after lapse of nearly two years.

CASE II. Mr. G. Z., aged 20, admitted to Christ Hospital with symptoms of obstruction of two days standing, moderate distension, obstipation and occasional vomiting, of a non-stercoraceous character; temp. 100.5°; pulse 108. Examination of abdomen revealed neither a tumor nor any special point or area of tenderness. Owing to the assumption that a man of his age and apparent intelligence would mention a hernia if any existed, no examination of the inguinal regions was made. Various non-surgical measures which were employed for 24 hours having failed, and the distension beginning to assume the type of mapped out coils, operation was decided on with a view of exploring the abdomen for an obscure pathology. However, and fortunately for all concerned, a small swelling in the right groin was discovered as soon as preparation of the operative field was begun upon the table. Of course it was a strangulated hernia—overlooked by every one, including the family physician, the hospital internes and myself, until that moment. Through good luck, rather than good management, the operation was still in time to avoid the necessity of resection. A Bassini radical method was employed and recovery was uneventful.

CASE III. Mr. C. B., admitted to Christ Hospital with evidences of intestinal obstruction. An abdominal section had been performed two years previously on the supposition that he was suffering from an intra-abdominal lesion, but it proved to be, however, a psoas abscess, which was still draining. The immediate history and findings were obstipation for two days; infrequent, non-stercoraceous vomiting; moderate elevation of pulse rate and temperature and some distension beginning to be "mapped." Immediate section disclosed complete occlusion of a loop of ileum by a band of adhesions, the result of his former operation. No resection necessary, and convalescence was rapid and complete, although of course he yet suffered from the psoas abscess.

CASE IV. Mrs. M. S., aged 68, admitted to my service at North Hudson Hospital, in a moribund state from strangulated femoral hernia, and died within a few moments after admission. I record the case on account of the lesson involved. She had had symptoms of obstruction for two days, but her physician concluded that the hernia, of which he knew, was not strangulated because it was a large one.

CASE V. Mr. H. F., aged 67, an alcoholic, was brought to North Hudson Hospital with a strangulated inguinal hernia,—also large and of long standing; obstruction had existed for 48 hours, and the patient was bordering on collapse, with indications of an extending peritonitis. Immediate operation revealed a gangrenous loop of small intestine, owing to a band of adhesions within the sac. The neck of the sac was large and free and permitted extension of peritonitis upward from the lesion. Resection of the gangrenous loop was followed by death within a few hours.

CASE VI. Mrs. U. S., aged 39, North Hudson Hospital, had had an appendectomy and double oophorectomy, by median incision, nine months before. She had the usual symptoms of obstruction 48 hours prior to her admission. Section disclosed numerous adhesions, although the first operation had been a clean one with no evidence of infection. A volvulus was found among the adhesions and was easily reduced, recovery being prompt and uneventful.

CASE VII. C. D., female babe, aged four months, admitted to the City Hospital after 12 hours of vomiting and bloody, mucous stools. The abdomen was tympanitic and no tumor could be felt on palpation, but a finger in the rectum readily detected a soft, bulging mass. The diagnosis of intussusception was evident. An enema of one pint of saline was immediately expelled, without any result on the rectal tumor. Immediate abdominal section revealed a sausage-shaped mass in the left abdomen and gentle taxis succeeded in reducing about 10 inches of large intestine, in spite of extensive fresh adhesions that had already formed. The invaginated bowel was of a dark color, but it was decided that vitality still remained and no resection was done. The entire operation occupied twelve minutes; there was no shock and convalescence was rapid and complete, the baby's mother being brought to the hospital to nurse it.

CASE VIII. Mrs. S., ill about one week when I saw her in consultation. She had complained of some abdominal pain and was constipated but enemas had produced some result up to that day; she had also vomited a few times. When first seen by me, at 9 o'clock in the evening, the abdomen was slightly distended but not "mapped"; temperature 100.4°; pulse 108 and fairly good quality. She gave a history of having been operated for appendicitis and ovaritis, by median incision, four years before, and of having had, in the meantime, occasional attacks of "indigestion"—colic with constipation. I recognized the possibility of post-operative adhesions tending to obstruction, but could not satisfy myself that actual obstruction existed and advised waiting until morning, for, if possible, a more positive diagnosis. The following morning, however, the entire picture had changed. There was increased tympanitis, suggestive of the "mapped" type; rapid, thready pulse; temperature 102.4° and an anxious expression, in fact, a condition of threatened collapse. Vomiting had occurred twice in the night and high enemas had resulted in escape of only small fragments of fecal matter. Recognizing a critical condition, immediate removal to Christ Hospital for operation was advised—advice which was even then debated by the family for two hours before consent was given. A constricting band of adhesions about a loop of ileum, from the old operation, was found and liberated but the collapse which was evident before increased rapidly after the operation and death ensued within three hours.

CASE IX. Mr. G. K., aged 43, seen in consultation after two days of obstipation, abdominal pain, non-stercoraceous vomiting and considerable distension. Pulse and temperature were about normal. The abdomen was materially more tense and distended on the left than the right side and was perceptibly tender in that locality. There was a history of a right inguinal hernia for 6 years previous, and a truss had been worn but laid aside for the past six months, on the assumption that the hernia was cured, as it did not come down. No hernia was apparent now, even on careful examination, but I was suspicious that a knuckle of bowel might be caught at the internal ring, which operation at North Hudson Hospital proved to be the case. The work was done through the median incision instead of through the inguinal region, because of uncertainty as to just what and where the pathology might be, and when completed the patient's condition did not seem to warrant a further and radical operation on the inguinal canal, which was postponed for ten days, when a Bassini was performed, a complete recovery from both procedures taking place in three weeks.

CASE X. Mr. A. M., aged 43, with symptoms and history very closely resembling the previous one. In this instance I split the lower portion of the right rectus, found the side of a loop of small intestine, strangulated in the internal ring, liberated it, and then closed the inguinal canal *a la Bassini* at the same sitting. The recovery was satisfactory.

CASE XI. Mr. J. I., admitted to my service at the City Hospital with symptoms of intestinal obstruction plus peritonitis. Abdominal section revealed a sarcoma of the lower portion of the sigmoid flexure which had inflamed, setting up a pelvic peritonitis. The growth was resected and the anastomosis effected by means of Soresi's method—rubber tube and catgut loops; peritonitis, however, persisted and extended, death occurring on the fourth day.

CASE XII. Mrs. H. S., aged 42, seen in consultation at 2 A. M. with every indication of complete obstruction of bowels, except vomiting. Obstipation had been complete for three days and prior to that trouble, some constipation alternating with diarrhea. The "mapped" type of distension was so characteristic that I had no hesitation in advising operation in spite of absence of vomiting. The patient was sent to Christ Hospital and operated at 11 A. M. that day. This case, like the preceding one, proved to be a malignant growth of the lower sigmoid, only a carcinoma instead of a sarcoma. The tumor, which absolutely occluded the bowel, was excised and end to end anastomosis done, in this instance by a modification of the Maunsell technic, a method deserving of more general application than it has ever enjoyed. A large amount of flatus was expelled and a fecal movement occurred before the abdominal incision was closed. The bowels moved 21 times within the next three days. Convalescence was so rapid that the patient returned to her home on the thirteenth day.

CASE XIII. Mrs. H. B., aged 59, a patient in North Hudson Hospital, had been operated six years before for appendicitis. The entire incision, about seven inches in length, had herniated and her history was that of repeated attacks of abdominal pain and constipation. During this attack she had developed evidence of intestinal obstruction, consisting of obstipation, vomiting and colic. The intestinal contents of the very large hernial tumor were accompanied by a mass of old adhesions which required an hour's careful dissection to safely liberate, during which process a knuckle of ileum was discovered sharply angulated and constricted by adhesions, constituting the obstruction. After dissecting out the entire sac an aponeurotic overlapping was done and a recovery with sound wall was obtained in three weeks, in spite of an inter-current attack of pneumonia.

CASE XIV. Mr. A. M., aged 34, on admission to North Hudson Hospital, suffered with acute appendicitis, of 36 hours' duration only, according to the history. On operation the appendix was found gangrenous and ruptured, while there was much pus in the pelvis and elsewhere in the peritoneal cavity. Peritonitis was quite general. The first loop of small intestines appearing in the incision had a perforation about the calibre of a goose quill which had apparently been sealed by an adhesion, until the abdomen was opened, for there was no general extravasation of fecal matter. The perforation raised the question whether the patient may not have had an unrecognized walking typhoid plus appendicitis. The perforation was closed by a purse string, the peritoneal cavity irrigated and closed, with drainage, not without much difficulty on account of a considerable distension. The progress of this case was favorable for 36 hours, when profuse and persistent stercoraceous vomiting accompanied by inability to move the bowels supervened. Lavage gave no relief to the vomiting and it was decided to immediately reopen the incision in search of an evident obstruction from some cause. This was done 48 hours after the first operation and in face of a very serious general condition of the patient as to circulation and general appearance. A very considerable eventration of bowels was necessary before I found the seat of obstruction, which was a sharply angulated coil of ileum with fresh adhesions. About six inches of nearby intestine had a most suspicious appearance as to vitality, but as the patient was in extremis by that time I decided not to resect, being very certain he would not survive the procedure. Even more difficulty was experienced this time in returning the distended intestines and closing the incision. In spite of all this, the obstruction did not recur and steady convalescence took place except for some sloughing of the fat in the incision and, at the end of two weeks a small fistulous opening at the upper angle of the incision, discharging a moderate amount of bile-stained mucus, without odor. Three weeks after the first operation the entire incision was freshened and reunited by quill sutures with good result except at the site of the biliary fistula, which opened and continued to discharge for about 10 days. The patient left the hospital six weeks from his admission in very excellent condition.

CASE XV. Mr. F. W., aged 38, had been operated for suppurative appendicitis about 7 years before. A small hernia at the lower end of the incision developed soon afterward. A supporting belt with pad was worn but the hernia gradually increased until it had attained a size about that of two fists. The drag of the rupture caused a severe pain in the back on that side and the patient had about concluded to submit to operation for relief of this when symptoms of obstruction suddenly intervened, necessitating immediate operation, which was performed 16 hours after onset of obstruction, at North Hudson Hospital. Adhesions were most extensive and dense and a loop of ileum was found to be sharply angulated and constricted by them. This obstructive condition was relieved and an overlapping of aponeurotic structures accomplished. The symptoms of obstruction promptly subsided and complete recovery took place in two weeks, accompanied also by relief of the persistent backache.

This series affords material for some practical suggestions regarding the etiology, diagnosis and treatment of intestinal obstruction.

Etiology. The causative factors in these fifteen cases were as follows: Strangulated hernia, 7; post-operative adhesions, 3; intussusception, 2; malignant growths of intestine, 2; immediate post-operative complications (angulation and adhesions), 1. Naturally a small series cannot be made a basis for statistical conclusions and the great preponderance of strangulated hernia—nearly 50%—will not hold good in general experience, but the writer believes that this condition is much the most frequent cause of obstruction, all ages included. Post-operative adhesions come next in this list and are undoubtedly a fruitful cause in cases that have been subjected to a previous operation. Why damaging adhesions occur after some clean, uncomplicated laparotomies, as evidenced by Case VI, is difficult to understand; also why one should have them in a case like No. I, where there was no other evidence of infection, and be free from them, as after the second operation on the same person, where there was a pronounced and prolonged suppuration, does not appear. The obstruction in Case XIV, following as it did so soon upon a laparotomy where much difficulty was experienced in keeping back distended loops of bowel and closing the incision, was probably due to mechanical pressure, angulating a coil of ileum. On the other hand, the second operation required rather extensive evisceration of intestines, which were even more distended than at the first operation; consequently there was even greater difficulty in returning them and the chances for a repetition of angulation and obstruction were increased; still it did not occur. The wonder is that immediate post-operative obstruction does not oftener occur after such procedures. Surely nature is kind in many instances where we are powerless to do more than our level best and take the chances. One case of intussusception occurred where it is most likely to take place—in an infant—but the other, a very extensive one, happened in a woman of 43, where it is comparatively infrequent, and no accompanying pathology suggested a reason for its presence. An interesting feature of this case is that in spite of the resection of 6 feet of small intestine—very nearly a record in that respect—no subsequent disturbance of nutrition was observed, the woman remaining in perfect health now after a period of nearly two years. Not a few cases of death from marasmus within the next few months are on record where even less extensive resection has been performed. The two cases of malignancy of the intestine emphasize the importance of early recognition of such conditions. The one which came to early operation made a quick and uneventful recovery; while the other which was not seen until peritonitis, from direct extension of an inflammatory process, existed, died within a few days, by a continuance of that process.

Diagnosis: An early diagnosis (followed of course by prompt operation) is the key to the situation in intestinal obstruction. In an address at the 1912 meeting of the New Jersey State Medical Society, Bloodgood, of Baltimore, stated that the statistics of Johns Hopkins Hospital showed 315 cases of intestinal obstruction during the past 20 years, and that the mortality in different years had ranged from 40 to 100%. The only reasonable explanation of such a high mortality must be late recognition of the condition.

In arriving at a diagnosis it is well to remember, as is illustrated by some of the cases in this series, that not all the symptoms of intestinal obstruction may be present. This is particularly true of vomiting, and especially of the type which is usually considered pathognomonic, viz., stercoraceous vomiting. It, to be sure, is pathognomonic when present, but it may be entirely wanting. Vomiting of any sort or degree may be absent as in case XII, or but trifling as in cases I and VIII. It is a serious mistake then, in the presence of other strongly suggestive symptoms of obstruction, to wait for vomiting, or the distinctive stercoraceous vomiting, to confirm a diagnosis. An error of this sort was committed in case VIII, when I waited over night for a positive diagnosis because vomiting had been slight and not stercoraceous. A golden opportunity to operate while the patient was in good condition was lost and a fatal outcome resulted.

The dependable symptoms of intestinal obstruction are *obstipation,* accompanied by inability to pass flatus, and some degree of *distension,* particularly if this be of the *"mapped out"* variety. Too much emphasis cannot be laid on the importance of the latter symptom, but it must be remembered that in many cases it does not exist and especially that in late cases it may be entirely masked by general distension. The location of distension may be a valuable aid in localizing the obstruction. Epigastric fullness, for instance, speaks for an obstruction in the upper part of the small intestine; general, symmetrical distension, for the same condition somewhere in the large bowel; while tympanitis more pronounced on one side of the abdomen indicates an obstruction probably in one or the other iliac regions, as evidenced in case IX. The mistake must not be made of considering as a bowel movement the washings of the

lower bowel sometimes effected by enemas or high irrigation. A considerable fecal matter may thus sometimes be washed away but this should not create a false sense of security. Subsequent irrigations in true obstruction will not produce a result and moreover flatus is not expelled.

Diagnosis may be materially aided by the discovery of a hernia and careful search should be made in all possible sites for a rupture, never relying on a patient's statement. Case II, although a young man of 20 and of fair intelligence, was unaware that he had a rupture, although he knew that he had had a "lump" in the groin for several years. It should be remembered, too, that an apparently cured hernia may be the seat of a strangulation, at the internal ring, as was true in cases IX and X. In such event it is better to do an abdominal section, getting good access to the internal ring, than to attempt operation through the canal; also it enables one to search for other pathology in case the suspicion of a strangulated hernia proves to be unfounded.

The evidence of a previous abdominal section should, also, add weight to the probability of an obstruction in the presence of suggestive symptoms. The etiologic importance of both hernia and post-operative adhesions is strongly impressed on one by the foregoing series of cases. The writer trusts that he is not too radical when he advises that doubtful diagnosis of intestinal obstruction (which ought to be rare) should be settled by explorative operation without undue delay. In his opinion it is much better to occasionally open an abdomen unnecessarily than to let one patient die through neglect to operate at an opportune moment while waiting for a positive diagnosis; and this leads up to the question of

Treatment: This may be epitomized in the single statement that it should be surgical as soon as a diagnosis is satisfying or even strongly suspicious. Delay with medical or semi-surgical measures is productive of the frightful mortality which has usually accompanied this condition. Delay on the patient's part in seeking medical advice, delay on the part of the general practitioner in passing the case over to a surgeon, are the fruitful causes of disaster, while it probably is true that the surgeon sometimes delays in instituting prompt surgical treatment. This alone can account for such statistics as have already been quoted. While the mortality rate of the present series compares favorably, being 26.7%, the writer feels that it is at least 20%, possibly 26.7%, too large. The four cases which resulted fatally were no more difficult *per se* to relieve than many of the others, except for the late stage at which they came to operation, and while any considerable number of cases of abdominal operations for severe conditions can hardly be entirely free from fatalities, yet, if taken in good time, these cases of intestinal obstruction should not be attended by a materially larger mortality than, for instance, appendicitis or pyo-salpinx.

Strohmeyer's axiom "If you find a strangulated hernia at night it should be relieved before sunrise; if during the day it should be relieved before sundown," applies with equal force to all forms of intestinal obstruction. One never knows what changes in the vitality of intestine may result from even a few hours delay, making necessary a resection where one would not have been needed, or on the other hand inducing a condition of collapse or shock from which the patient cannot rally.

Hartwell, in a paper on "Experimental Intestinal Obstruction," read at the 1912 session of the American Medical Association, contended that deaths from intestinal obstruction are due to loss of body fluids, owing to the profuse vomiting. This is probably true in many, if not most, cases, and again speaks for the importance of early operation before the tissues have been drained of fluid. It also suggests the advisability, in cases where, from any cause, operation must be delayed, of supplying the lack of fluid by saline transfusion; but there are undoubtedly cases where death is due solely either to shock or toxæmia; witness case VIII of this series, in which vomiting was a negligible quantity and yet the patient sank into a condition of collapse shortly before operation and never recovered from it afterward, although the operative procedure was simple and brief. This again indicates the vital necessity of prompt operation before shock or collapse supervenes. So from whatever standpoint one views the situation, early diagnosis and prompt surgical intervention are the great essentials if we would rescue this condition from its hitherto frightful and unnecessary mortality.

In conclusion the writer would make a plea for the more general use, in cases which require resection, of the "Maunsell" method of technic for anastomosis. By invaginating (or telescoping) the intestinal ends through a small linear slit near one of the open ends, they are brought into perfect apposition, serosa opposed to serosa, the mucous surfaces exposed, and thus may be quickly and securely united by a single row of Pagenstecher thread, penetrating all coats. It has every advantage of an all suture method, as contrasted with those using mechanical devices, does the work with one, instead of two, rows of sutures, and is rapid, while it affords the strongest possible sort of joint. The making and closing of the linear slit is a matter of not more than two minutes and may be disregarded. Instead, however, of using interrupted sutures for the circular enterorraphy, as was proposed by Maunsell, and as still described in text books, the writer uses a continuous, interlocked suture, which has many decided advantages. One who tries this modification of the old Maunsell method will, in our opinion, hardly return to either a button or any other mechanical device, or to the commonly used technic of two rows of suture with the intestinal ends simply approximated instead of being invaginated. The method is equally well adapted to end to side and lateral anastomosis.

The Milk Supply.

It is only by a great awakening of the better minded people in the community that a satisfactory solution of the general milk problem can be reached. At the present prices for ordinary milk it cannot be clean and must be heated to be even admissible. For the price paid to the farmer he cannot produce anything better. By coöperation and direction and increased pay for cleaner milk a product closely approaching certified milk in bacterial count can be produced at a much lower cost.

It is impossible to produce clean milk without much care and some specialization. It must be managed by men of business ability who possess the proper educational qualifications. It is not perhaps necessary for the general milk supply to conform to certified standards in all their minutiæ, but it should conform to one comparable to that by which other foods are judged and it should command a higher price. Even so it will still be an economical food. "The food value of a quart of certified milk cannot be duplicated for 15 cents by any other combination of foods obtainable in the market."—*Archives of Pediatrics,* July, 1912.)

A National Society of Anesthetists.

Following a symposium on anesthesia at the recent session of the American Medical Association, the National Society of Anesthetists was organized. The following officers for the year 1912-13 were chosen: President, Dr. James T. Gwathmey, of New York; vice-presidents, Drs. Charles K. Teter, of Cleveland; F. H. McMeechen, of Cincinnati, and Yandel Henderson, of New Haven; secretary, Dr. William C. Woolsey, of Brooklyn; treasurer, Dr. Harold A. Sanders, of Brooklyn. The society invites all those who are actively interested in this work to join its ranks and assist in developing the subject of anesthesia to greater perfection and more uniform safety.

A felon may frequently be aborted by covering the end of the finger with cotton saturated in alcohol and protected from the air by a rubber finger cot.—(*Am. Jour. Surg.*)

THE SURGICAL ANATOMY OF THE NASAL SEPTUM.

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While the nasal septum would seem on first consideration the simplest of all anatomical structures, yet, like every other part, when carefully considered it is found to have an interesting story of development and peculiarities of structure, a knowledge of which is of the greatest assistance in diagnosing its pathological conditions and attempting their relief.

Briefly it may be stated that the nasal septum is framed in between the nasal bones, the base of the skull and the hard palate.

It is formed originally, like the rest of the skull, as a plate of cartilage. The baby's skull is so soft at birth that, with the thumb in the mouth against the hard palate and the other fingers on the top of the head, the face can be much compressed. This elasticity of the septum as well as of the other parts prevents the bumps of babyhood from producing lasting septal deflections. Not until the sixth year is the perpendicular plate of the ethmoid (which occupies the upper part of the septum) ossified to the body of that bone. Before this time there is not the same unyielding construction of the septum and its surroundings as exists later.

The Vomer (forming the lower part of the bony septum) has an interesting development, different from that of the perpendicular plate, and one which has a practical bearing on surgical procedures. The Vomer is a membranous bone, formed by bony deposits *in the membranous covering* of the primitive cartilaginous septum. It is thus really two bony plates with cartilage in between. These fuse together as the cartilage is absorbed between them, beginning at the bottom, but it is never completed, so that the Vomer always has two lips overlapping the cartilage and perpendicular plate above.

The whole septum is set in an elevated groove along the nasal floor.

The septum not only divides the nose into two parts, but by its covering of mucous membrane furnishes more space for moistening and warming the inspired air; and by forcing the air through narrower channels allows the secretions to be better drained or more forcibly blown out of the nasal cavity. The respiratory portion of the nasal fossæ including the septum is covered with ciliated columnar epithelium, containing goblet cells and mucous glands. Normally the mucous membrane is thus kept moist and the actions of the cilia keep up a constant drainage towards the pharynx. In the normal narrow spaces between the septum and turbinates capillary action also assists drainage. The mucous membrane should be conserved as far as possible from injury in operations; as raw places, denuded of mucous membrane and left to granulate, are covered in the process of repair by simple squamous epithelium on which the secretions dry and form scabs. At several places in the septal mucous membrane there are collections of venous erectile tissue. The largest of these is in the upper part of the cartilaginous septum, and especially when engorged during an acute cold is quite often mistaken for deformity or deflection.

The cartilage of the septum does not extend to the anterior extremity or to the tip of the dorsum of the nose. These are shaped by the separate cartilages of the allæ which surround the nasal openings in a semi-lunar fashion. The cartilages which form the upper framework of the external nose are connected with and really part of the cartilage of the septum, bending out over the outer wall. A tail end of the cartilaginous septum often extends back between the two parts of the bony septum nearly to the sphenoid bone.

The bony septum is subject to injury by blows on the face, because of the attachment of the perpendicular plate of the ethmoid to the upper two-thirds of the nasal bones. Blows here may be carried back into the cribriform plate, opening into the skull cavity; or may be carried down into the bony septum, producing fractures in its deeper parts. These fractures are nearly always compound, because the sharp pieces of bone easily pierce the mucous membrane; and there is much bleeding. If there is a fracture into the base of the skull there may be an escape of cerebro-spinal fluid; but the appearance of this fluid is often obscured by the bleeding. Also the irritation of the mucous membrane may produce such a watery discharge as to be mistaken for cerebro-spinal fluid. Anatomically a loss or disturbance of the sense of smell might be expected from

Median Section through the Head. Most of the Septum has been removed, leaving only its attachments at the edges to show its relations to the surrounding structures. Author's Specimen from Laboratory of Anatomy, University of Pennsylvania.

a fracture of the septum involving the cribriform plate; from the injury to the olfactory nerves at this point. But *any* injury which causes such swelling as to prevent the inspired air from reaching the upper parts of the nose, where the olfactory mucous membrane is located, will have the same effect. "Fractures in this region, owing to the rich blood supply, heal quicker than anywhere else in the body" (Treves), and therefore it is essential to replace the fragments at once. At the same time there are no muscles to reproduce the displacements after the fragments are once put in position.

Blows on the lower soft parts of the nose are more apt to dislocate the cartilage from its attachments to the surrounding bony parts, especially along the floor. The cartilage is so extremely pliable that it is seldom fractured; and so resilient that, though it be torn or cut and be left attached at only one point, yet it retains its original shape and position.

On examining the septum clinically, we find that the very front part is soft, movable and contains a little column of cartilage separate from the main cartilage of the septum. Looking deeper into the nose with a speculum, a ridge is often seen a little above the floor running backward and upward on the septum. This is the most common site of deflections, and rep-

resents the upper (anterior) border of the Vomer, where it articulates with the cartilage and perpendicular plate above.

Though it is a disputed point, it seems likely that most deflections of the septum are caused by growth continued within the different parts of the septum after its boundaries have been fixed by the ossification of the bones at the base of the skull and the hard palate, which surround it like a picture frame. With the pressure of this growth from within and no room for expansion at its edges, there is a general bowing of the septum; with thickenings and ridges produced where the different parts meet and press against each other. This is most noticeable, as stated, along the slanting edge of the Vomer.

There is another form of ridge, i. e., a broad, low ridge which lies immediately above the nasal floor, and may be easily mistaken for the nasal floor itself, unless it be remembered that the nasal floor is at a lower plane than that of the vestibule, and extends backward toward the level of the lobe of the ear. This kind of a broad ridge overlying the nasal floor is due to the pressing over or overlapping of the lips of the groove in which the septum is held. Often the pressure of excessive growth also causes overlapping of one part above another; so that a ridge may consist of a layer of cartilage overlying the bone below. These more or less angular deflections of the lower parts of the septum are usually accompanied by a bowing to the opposite side higher up.

Septal deflections are seldom seen in infants, and deflections causing nasal obstruction are infrequent under fifteen or sixteen years, *but the beginnings* of what afterward *become* obstructing lesions can be plainly seen in a large number of children.

Two factors which have to be considered in deflections of the septum, as first pointed out, I believe, by a Philadelphia rhinologist, are (1) that a deflected septum represents *more tissue* than is represented by a straight septum in the middle line, and (2) that the cartilage is resilient, and cannot be kept in a new position by simply bending it, but will return to its original position if left attached at any point, just as soon as the pressure, as by a splint, is removed. It is most surprising to one who experiences it for the first time to look into a nose a month or two after attempting to correct a septal deformity by cutting and crushing it, as might be thought, beyond all possibility of recurrence—to see the deflection there still—exactly as it was before—except for a few scars. This, of course, does not refer to all flap operations; in some of which the flap is mechanically held in a new position. Even in the submucous resection we should not be led to believe that cartilage left behind which is out of the median line will be forced over by splints and its resiliency destroyed; as this is not the case, but the deformity will persist.

The arrangement of the periosteal and perichondrial coverings of the septum are such as to increase the difficulty in performing a sub-mucous resection, unless it is understood that the entire septum is not covered by one continuous sheet of periosteum, but that each separate part has a separate periosteal or perichondrial covering; which passes from one side of the septum to the other at the suture lines—each constituent part of the septum being enclosed as in a separate envelope apart from the rest. Thus in separating the periosteum there are points of apparent adhesion where the cartilage joins the perpendicular plate and also along the Vomer ridge previously mentioned, owing to this dipping in of the periosteum.

Conservation after operation for incurable tubal infections leaves more tender and troublesome ovaries than after conservation following hysterectomy for fibroids, prolapse or the hemorrhage of chronic metritis.

When the abdomen is opened to discover the sigmoid, if it is not found at once, search should be made toward the median line.—(*Am. Jour. Surg.*)

OPERATIVE SURGERY ON THE NASAL SEPTUM.

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The rational consideration of this subject includes the following four phases: First, the surgical indications for operative procedure; second, accepted methods for such procedure; third, surgical selection and precautions; and fourth, the logical outcome of operative interference.

First: Indications for Operation. The most excellent anatomic resume by Dr. Butt in large measure provides the answer for the first group; and reduced to concise statement this discussion lends itself mainly to the physiological evidence of nasal obstruction.

Indications for surgical measures upon this ground (i. e. nasal obstruction) are manifold; mouth breathing with its associated maxillary and dental derangement; evidence of defective mucous secretion, including bronchial disturbance; obstinate naso-pharyngeal catarrh; evidences of sinus congestion and possibly ocular symptoms; and the onset of tubal catarrh and middle ear disease. Possibly, too, external visible malformation of the nasal chamber leads the general practitioner to refer, in a given case, for special examination and corrective treatment.

It is somewhat difficult in this category to disassociate from septal trouble the anatomical and physiological conditions of the vascular turbinate structure, and frequently the decision is a delicate one as to the point at which interference will be most beneficial.

The speculum examination must not overlook the very floor of the nasal cavity with a possible projection of the maxillary ridge. Such examination may present a varied distorted condition, but perhaps the most common picture is that shown in the chart diagram (Diagram I), a septal deviation (here to the left) with an important compensatory deviation at the base (to the right).

Sometimes in the traumatism occurring during a dislocation of the nasal bones from the maxillary attachment (even in one which has been properly corrected externally) irregular types of septal distortion are left internally, such as an S-shaped curve; an antroposterior bend; longitudinal or vertical angular displacement; and, occasionally, a slitting of the layers of the septum and marked bulging on either side even to turbinate approximation anteriorly or posteriorly. Occasionally a hematoma, following traumatism, occurs in the septal layers and this having been evacuated successfully may still leave considerable nasal obstruction from thickening, even though necrosis may have been escaped.

Evidence of the conditions above noted would lead to careful study of the conditions which produce irritative approximation, septal erosion from modifications of the air current and stasis of foreign particles, unilateral breathing, specific neurosis of hay fever or asthmatic type, and perhaps, as indicated by Randall, a secondary hypertrophy of the pharyngeal tonsil (adenoids).

In further elucidation of the above, the animal experimentation by Anderson might be cited. These experiments have shown impairment of vitality, diminished resistence to infection, changes in respiratory conditions, cardiac dilatation, and even changes in the blood and skin, as due to the irritation of nasal obstruction.

Second: Methods of Operation. Granting that the septum in its malformation indicates operative relief, surgical measures for such procedure may be grouped in four classes. First, those which by saw operation remove exostosis, ridge, or completely sever the inferior border of the septum, as in the

Gleason and Watson methods; second, the various means, more minor surgically, which force correction and then by use of a splint endeavor to overcome that most obstinate resistance to permanently good position, the resilience of the septum, such as the beveled saw operations of Kyle, the Roe septal pressure forceps, the button and suture of Marshal, and the various types of pressure splints and pads; third, the double incision of the Asch operation, and fourth, submucous resection with removal of displaced cartilage and bone, and replacement of tissue in correct position, without removal of the important mucous surface.

There are conditions when each of the above methods might perhaps be utilized with profit. But as the advanced physician of the day utilizes laboratory tests as routine, and employs serum therapy as a constant adjuvant, so might it seem logical to make a plea for utility within the nose of that most important physiologic servant, its own mucous membrane, and suggest a possible routine, whereby practically never more than is avoidable of this important surface covering is destroyed.

Dr. Butt has pointed out that the mucous membrane of the septum in its prolongation renders ready elevation of the periosteum difficult, and when this is accompanied by difficult angles of displacement matters are made worse; but it is nearly always possible to remove any necessary portion of cartilaginous or bony hypertrophy and still leave the major portion of its periosteal and mucous covering intact.

In brief outline (Diagram II), the procedure for sub-mucous resection consists in making a careful vertical incision internal and parallel to the columnar cartilage of the nose through

DIAGRAM I.

the mucous membrane and perichondrium down to the division cartilage; this incision should be made carefully, though the cartilage is a limiting safeguard, and may be, as has been suggested, continued downward, even across the base of the meatus. Then by one of the various forms of dissecting elevators introduced through the incision, the membrane should be carefully dissected from the cartilage an inch or more backward until the junction of the cartilage with the bony septum is encountered. One author to prevent injury to the mucous

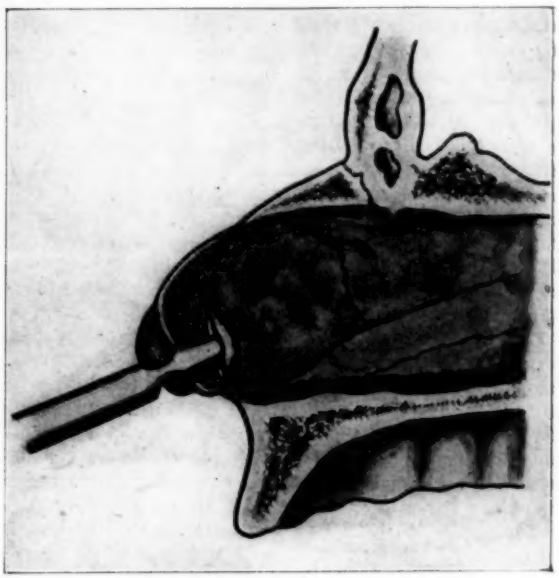

DIAGRAM II.

membrane elevates the muco-perichondrium by packing the opening with coils of strip gauze and forcing this slowly backward. Having accomplished the dissection of the one surface (which it must be confessed is much more easily done for a right handed person from the operator's right side, although technically the proper approach is from the convexity of the deflection) an extremely delicate and careful incision is made through the cartilage as far as the perichondrium of the opposite side; into the niche a delicate dissection blade is introduced and by similar method the perichondrium on the opposite side is elevated. This leaves the cartilage and various projecting foci standing out between two dissected coverings, each containing perichondrium and mucous membrane and accompanied, if the membrane is not injured, with comparatively little bleeding. Next, with swivel knife or cartilage forceps of some pattern, the deflected portion of cartilage is removed, the mucous surface is brought together in the median line and is supported by tampon splints, later to be moistened by an antiseptic solution. Rubbing these splints with bismuth powder before inserting them renders them far more easy to remove in dressing. The whole procedure will be found to have been accomplished with but little pain, as the parts are so readily cocainized, and less hemorrhage is usually seen than in an ordinary case of epistaxis. It is but fair to add, however, that the subjacent ridge, often requiring chisel and bone forceps for removal, and the spreading bony septum, which may be partly to blame for the obstruction, often present considerable operative difficulty, and a frank operator will inform you that his operation may require even an hour or two for completion. The result of the operation, however, is that, with the newly organized partition (which is readily formed because of the osteogenetic layers that remain) a new and correct position is obtained in contrast to the very dubious outcome of measures using pressure to overcome the resiliency. One must confess that failure by methods other than the sub-mucous resection is on this account far too frequent. Then again the hypertrophies and scar tissue, formed by excessive granulation after saw removal of a spur, are sometimes discouraging.

The above description applies to the complete septum deflec-

tion removal. In modified form, it can be utilized in many conditions; for example, the membrane at an excoriated point which bleeds frequently can be gently lifted, the submucous projection of cartilage or of bone removed and the membrane replaced, thus shortening the period of healthy healing by many days or weeks. In the case of a low spur with an especially broad base, the membrane may be dissected up by an inferior broad line incision, the protruding bone removed and the membrane replaced.

Of course this operation requires care, but if skillfully done, an open incision may be made, even into both nares, without resultant perforation, inasmuch as a septum kept clean will usually remain intact provided the tears in the two flaps are not at a point opposite each other. Compare this procedure with our unhappy efforts in maintaining position of even completely displaced sections in the Asch operation and occasional perforation, and again with the partially corrected bow of the beveled saw operation.

Third: Selection and Precaution. The third group has been largely covered in this outline and some precautions have already been given. To these may be added the wisdom of using a low percentage of cocaine preparation (or cocaine powder) and if adrenalin is employed, a careful approximation by firm padding to meet the possible resultant vascular reaction. Then again the mucous membrane should not be injured to any greater degree than necessary and yet it is surprising how nobly the nose in all its parts will lend its aid to natural recovery. Even with antiseptic splints or pads it is wise to remove these within forty-eight hours, while twenty-four hours is usually better, not only for relief of pressure upon the septum but also to relieve the danger of future sclerosis of the turbinate structure.

Fourth: The Outcome Following Operation. First: After the recognition of septal defect and its proper surgical correction the air current is returned to its normal channel, meeting the surfaces of turbinates and the septum in fair division and affording a maximum of olfactory and respiratory function, perhaps limiting too the danger of excoriating ulcer. Second, the irritation, secondary to obstruction, stimulating to hyperplasia and hypertrophy in the naso-pharynx, is in large degree eliminated, assuming, however, that there is no cellular degeneration in the lateral walls, or sinus involvement to complicate condition. Third, tendencies to tubal catarrh will most likely be removed, even to the relief of an already established tinnitus. Fourth, the pressure neuroses, by contact with turbinates producing profound reflex disturbance, may perhaps be eliminated or forestalled. It is rather unfortunate that septal correction, often of paramount importance in young children after traumatism, is extremely difficult on account of the vascularity. Fifth, a point by no means unimportant and which should seem both pleasing to the general practitioner and reasonable to the specialist, the after care of a nasal condition can be far more rapidly returned to the natural care-taker of the patient, *his family physician.*

Another important phase of this subjeict is that connected with the septal perforation, either post-operative or specific, and depression of the nasal bridge. A simple small perforation, unless it be located in an area producing whistling respiration, is probably unimportant in itself but may be extremely disagreeable to the patient, on account of marginal crusting and ulcerative bleeding. Surgical relief for this condition is in the nature of plastic operation, representing various procedures and inviting both ingenuity and dexterity. An essential result is first of all to remove free projecting cartilage or bone; second, to diminish the exposed surface by a periosteal flap and the stimulation of marginal granulation.

For depressed bridge, the procedure is a most difficult one and like the external correction of nasal deformity may require also chiseling of the maxillary processes and possibly paraffin injection.

In conclusion, let me urge a surgical study of the deflected septum based on its influence upon the air current, its tendency to pressure irritation, its secondary effect upon the naso-pharynx and its relation to sinus congestion; let me urge its surgical correction after careful analysis of physical conditions fundamentally contributing to the difficulty, never forgetting the importance of preserving to the utmost the natural mucous surface of the nasal cavity.

Removal of Faucial Tonsils.

Harold Hays (*New York Med. Jour.*, July 13, 1912), in a thorough paper, discusses the indications for the removal of the faucial tonsils. Points to be taken into consideration are the size of the tonsil, whether it is diseased, its relation to the rest of the throat, and its association with other local or general conditions. In infancy and early childhood the tonsils play a very important part in warding off various infections. Children under the age of four years should not be operated upon unless there is some special and definite indication, such as chronic suppuration of the ears, recurrent tonsillitis, hypertrophied and suppurative glands of the neck, etc. While the tonsil probably has an immunizing function in early life, as taught by Good, there is apparently no function after the first few years. Almost every tonsil which is removed has been found to be the seat of disease. In fact, a normal tonsil is a curiosity. As the child grows older the hypertrophy induced by repeated infections enables the tonsils to take better care of themselves, but a time comes when they appear to wear out and become so pathologically altered that they can perform no physiological function. Then they are a distinct menace and should be removed. The size of the tonsil is of very little importance in the determination of its removal, except in those cases where it causes obstruction to swallowing and respiration because of its large size. Small, buried tonsils associated with enlarged glands should always be completely enucleated. The chronically inflamed tonsil, resulting from streptococcus infection or the exanthemata, should be removed because of its bad effect on the general health. It should be said further of the small, buried tonsil, that it is often the seat of tuberculosis, and may bear a relation to disease of the hip joint and other forms of tuberculosis. In determining whether tonsils should be removed it is important to consider the relationship of the size of these organs to the child's throat. There is one symptom complex of childhood which, as a rule, demands operative interference. This comprises a high arched palate, very narrow nasal orifices, a thin pinched expression of the face, mouth breathing, adenoids in the nasopharynx and enlarged tonsils in the throat. Removal is often followed by a remarkable change. The tonsils may not be excessively large, but in relation to the throat they cause much more annoyance than many a larger one taken by itself. They interfere with respiration. Tonsils should be removed when they play a part in conjunction with decayed teeth, nasopharyngitis, chronic cough and hoarseness, middle ear catarrh, suppurative conditions of the ear, hypertrophied and suppurative glands of the neck, mouth breathing and high, arched palate. Where there is a good reason to suspect a connection with anemia, gastroenteritis, or bronchitis, in other words where there is a secondary deterioration of the general health or an interference with development, the tonsils should be removed. Enlarged or diseased tonsils may bear a relation to iritis or conjunctivitis of long standing, though the connection is hard to define. Special indications for removal are quinsy and the co-existence of rheumatism and tonsillitis. Finally, it may be said that the promiscuous removal of the tonsils of children without the finding of some associated, pathological condition, is pernicious. All cases demanding operative interference should be carefully selected.

The Medical Times

A MONTHLY JOURNAL

OF

Medicine, Surgery, and Collateral Sciences

ESTABLISHED IN 1872

EDITED BY

H. SHERIDAN BAKETEL, A.M., M.D.

Original articles and clinical communications will be welcomed, if given for exclusive use in this journal.

When authors furnish drawings or photographs, the publishers will have half tones and line cuts made without expense to the writers.

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SINGLE COPIES, 15 CENTS

Definite written orders for THE MEDICAL TIMES are required from all subscribers, to whom the journal is thereafter regularly forwarded, until written notice to discontinue is sent to the publisher.

All communications should be addressed to and all checks made payable to the publishers,

MEDICAL TIMES CO.

ROMAINE PIERSON, *President and Treasurer*

H. SHERIDAN BAKETEL, *Secretary*

108 Fulton Street, - - - New York

Entered as second-class matter, Post Office at New York, N. Y., Act of Congress of March 3d, 1879.

NEW YORK, SEPTEMBER, 1912.

TEA AND COFFEE.

Most of us are wont to consider tea and coffee with Bishop Berkeley "of a nature so mild and benign and proportioned to the human constitution as to warm without heating, to cheer, but not to inebriate." It is hard to believe that these national drinks, indulged in moderately, are harmful. It is not the use, but the abuse of the beverages, which is causing men to analyze their usage for the purpose of determining their proper status. "Good things may be abused" and most of those who complain of evil consequences following tea and coffee indulgence are guilty of intemperance. We commend them to Shakespeare, who in so many instances, displayed a considerable knowledge of physic, when he suggested in Act I, Scene I, of Henry VIII, to,

"Ask God for temperance; that's the appliance only
Which your disease requires."

Temperance is quite as necessary in the ingestion of tea, coffee and food, as in alcohol. We do not believe any person can drink two or three cups of strong coffee or tea at every meal, as so many do, and not eventually pay the price of the indiscretion. Nor can a man drink several glasses of spirituous liquor daily without meeting the inevitable results.

If in tea, coffee, food and alcohol we would bear in mind Milton's admonition,

"Well observe
The rule of not too much, by temperance taught,
In what thou eat'st and drink'st,"

there would be no demand for the so-called substitutes for coffee and tea. To the poetically inclined the banishment of these delightful beverages would play havoc. How we love to ruminate over the heart-spoken words of Sydney Smith,

"Thank God for tea! What would the world do without tea? How did it exist? I am glad I was not born before tea."

Or Colley Cibber, that word painter,

"Tea! thou soft, thou sober, sage and venerable liquid, * * * thou female tongue-running, smile-smoothing, heart-opening, wink-tippling cordial, to whose glorious insipidity I owe the happiest moment of my life, let me fall prostrate."

Even the dignified Waller believed that tea "keeps the palace of the soul serene."

If men persist in allowing habit to obtain the upper hand, it may be necessary to curb the desire for such drinks as tea and coffee, as well as alcoholic beverages. The Germans are introducing maté as a substitute for coffee, as its alkaloidal content is so small as to be practically harmless. The maté leaf is largely used in South America. The average consumption in Paraguay is twenty-nine pounds per capita and in Argentina twenty pounds. Many people dislike the smoky flavor of maté, due to the crude way of preparing the leaves—the drying of them over an open fire. But it is claimed that superior methods of preparation will make maté a powerful rival of coffee and tea, all the more as it is much cheaper. A pound of it makes five times as many cups as a pound of coffee; and, unlike tea leaves, the maté leaves can be used for a second infusion without impairment of the quality.

The symposium presented in another part of this issue gives the opinions of some well known physicians. Temperance is the underlying thought in their expressions and to temperance we commend those who are interesting themselves in this interesting topic.

FEEBLEMINDEDNESS AND ITS REMEDY.

A careful analysis of Dr. Goddard's book, "The Kallikak Family," an extended review of which is published on another page, gives the thoughtful reader much food for reflection.

It demonstrates most forcibly that the feebleminded in our midst constitute a distinct menace to our social life. From their ranks are recruited most of the criminals, prostitutes, paupers and the worthless members of every community. Decent citizens pay a heavy price for these hereditary perpetuations. Men sit calmly by and allow the criminal to procreate his own kind, the idiot to beget the idiot and the harlot to give birth to the illegitimate seeds of concubinage. While the degenerate classes multiply the tax rates continue to increase.

Our taxes are 40 per cent. higher than they would be if this problem were met rationally and scientifically.

When it was found years ago that fires were causing untold damage men set to work to remedy the evil. Fireproof buildings are the result and while our fire loss is still needlessly heavy, a few generations will see every building fireproof.

In all the material things of life the financial end is considered and improvement, including the elimination of the useless, is the ultima thule.

The problem of dealing with mental defectives as a matter of fact touches the pocket of every citizen, for be he property owner or renter, every man directly or indirectly contributes his proportion of city, county, state and federal taxes. Every man in every community is paying his mite—and no inconsiderable mite it is—to support prisons, jails, insane hospitals, alms houses and the special institutions made necessary for the care of our great herd of mental deficients.

If a burglar robs a house, the inhabitants thereof take every precaution that such an occurrence is not repeated.

Decent, normal citizens are being continually robbed of hard earned money; feeble, suffering chil-

dren are being brought into the world every year, little, rickety, syphilitic, blind bundles of festering humanity, a burden on themselves and society, all because the public is calloused to the knowledge and sight of misery, or because it does not think, or know or care.

It objects to highway robbery, but condones this insidious form of robbery accompanied by suffering.

The public conscience should be aroused to the evils attendant upon feeblemindedness, so that the subject could be treated fearlessly and firmly.

We are positive in the belief that sterilization of criminals and mental defectives of all classes is logical, sensible and effective. The operation is trivial and harmless and absolutely prevents procreation. If this were to be carried out many of our institutions could be closed, our criminal classes would be diminished, epileptics, inebriates and the various types of persons of deficient mentality would be startlingly less and society would eventually be raised to a higher plane.

A united effort on the part of medical societies and civic organizations could do much to bring about sterilization laws. Eight states, or one-sixth of those in the Union, have wearied of the increasing burdens put upon them by these unfortunate classes and have enacted laws calling for the sterilization of certain prescribed persons. These laws are admirable as far as they go, but they are not sufficiently sweeping.

When a man suffers from a gangrenous leg, his surgeon does not amputate his toes. He goes to the bottom of things and the leg is taken off.

It is not enough to sterilize a man who has been convicted of certain serious offenses against the state. Any person guilty of a felony showing premeditation is not worthy of procreating his kind and he should be sterilized.

As a standard for sterilization we would take the individual who shows tangible evidences of defectiveness. We would separate the sheep from the goats and see to it that the unfortunate ones be forever prevented from encumbering the earth with their offspring.

THE EXPEDIENCY OF FAMILY CURTAILMENT.

Of especial interest to eugenists are the phenomena of declining birth-rates in various countries of the world. By no means does France stand alone today in this respect. The Germans are less fertile now than ever before. In 1911 Prussia registered 34,000 fewer births than in 1910. In 1909 there were 31,000 more than in 1910. In 1908 there were 21,000 more than in 1909. In Australia the government proposes to grant maternity allowances as a means of increasing the birth-rate. What is the cause of this seemingly universal process? We are inclined to think that sociologic, rather than biologic, causes are operating. The cost of living is a problem all over the world, increasing as it is everywhere. The economic burdens of the people are becoming heavier. Grievous social abuses are not being remedied in many instances. While more intelligent than ever the people are being exploited in subtle ways. Their manner of meeting the peculiar conditions that exist in our highly civilized and complex society also tends to subtlety, as compared with the response of earlier and less sophisticated generations. It expresses itself tangibly, this passive resistance to destructive social forces, in one way as a lessening of the birth-rate. Progeny is being limited voluntarily by the highly intelligent, and in an enlightened manner, that is to say, for the children's sake, to whom this class of parents cannot give what is essential for decent living, training and culture. Another class is limiting progeny, not for the sake of the children, but in order that the members of this class may themselves survive economic stress. Their struggle is keener than that of the first class and dire necessity dictates their course. Of course, the two types fuse at points. We are not concerned with the idle rich, the depraved, or the purely selfish people who have their own special reasons for refraining from parenthood. Our interest lies wholly with that great majority whose reaction to the economic forces acting upon them is itself economic in character. The joys of maternity and family life, in anything like full measure, are denied this majority, yet it is a group which sincerely desires them. So strong is this desire oftentimes that consequences are defied, but such elemental feelings are at war with existing conditions. Then follow the horrors of juvenile morbidity and mortality, which if survived are themselves followed by the factory, the mine, the mill, the industrial treadmill in its many aspects, and the battlefield.

What eugenic program having application to the masses no less than to the classes is feasible under existing conditions? How shall the State profit if it continues to sacrifice its citizenship to the greed of special interests? What has England profited by its exploitative land and manufacturing policies and why is it at the present time furnishing a spectacle of feverish dismay in its frantic attempts to institute "radical" legislation which, it is hoped, will breed men physically fit for army service, upon which service is fatuously supposed to depend the glory and continued supremacy of the British nation? What is to be witnessed in it all but a feeble attempt to work with obsolete tools, to make new wine with broken utensils and keep it in cracked bottles. Of like character are the palliative schemes that are proposed here, in respect to profit sharing, the taxation of great fortunes, etc., etc. Nothing really radical is done, nor does our benevolent feudalism contemplate fundamental social changes. True radicals stand socially excommunicated. They are not respectable, the press conspires to ignore them, and the holocaust goes on. A great duty confronts the medical profession. Its understanding of the eugenic necessities of the race, and the practical policies fostered by it, should be founded upon the broadest possible study. The profession will lose caste if it neglects its opportunity and its plain duty.

We may say, then, that pending a rational reorganization of society the need of curtailing the size of families is the only expedient that our hard pressed citizenship can avail itself of. This very limitation is itself a eugenic measure of the first order, since large families to-day mean more degeneracy. And one of its greatest justifications, until such time as economic conditions are favorable to the birth of children who can be guaranteed endurable lives, is the fact that it will directly tend to lessen the dreadful curse of private charity, which can never be expected to sink its foul head back into the fetid morass whence it came until society has put its house in order. Then, and not till then, will the rich criminal, now euphemistically called a philanthropist, be debarred from purchasing immunity against the wrath of a now charity demoralized people, and from founding a smug, factitious, contemptible respectability upon the pauperized souls and bodies of grossly handicapped children and starved, diseased men and women.

JOHN JAY TAYLOR, M. D.

With the passing of Dr. John Jay Taylor, editor of *The Medical Council*, medical journalism loses one of its best exemplars and the world is poorer in real men. Death has indeed chosen a shining mark.

A man of good report, modest but fearless, sweet but firm, able but retiring, he personified the true physician. In his simple way John Jay Taylor pursued one course, the right course, which leads to perfection in all things. He believed in his profession and his life exemplified his belief. He felt that through the medium of the printed page he could assist in the idealization of medicine and thousands of physicians throughout the country will as long as life lasts regard him as a beneficent teacher and a generous contributor to their knowledge.

Unassuming to a degree, John Jay Taylor was a leader in all things that tended to betterment. He was an ardent believer in honest journalism and believing, he acted, and when the fourth estate reaches the heights of perfection which are easily attainable the craft will have cause to regard him as a great force in the attainment of the ideal.

John Jay Taylor was a friend, so rare in these selfish days. To every one he held in regard, he was the personification of friendship. Realizing that "the only way to have a friend is to be one," he *was* one, in sunshine and in shade.

Illness burdened the last months of his life, but neither suffering nor anguish could embitter the sweetness of his disposition. Until the finger of God touched him he was always the same. May the everlasting peace, which comes to them who live right and die right, be his.

A PARADOX IN HEREDITY.

The first International Congress on Eugenics, recently held abroad, brought forth diverse views, as was to be expected. Even the advocate of large families was there, with the plea that it is often the later children in families who acquit themselves best in life, also arguing that large families must be raised in order to offset the high mortality of early life. The latter point, if we remember rightly, was made some time ago by Eliot, the educator. It seems to us a barbaric point of view.

We have heard enough about the Jukes family and its degenerate members, but not so much is said about the high-grade crooks who have founded good lines. A case in point was cited at the congress. The founder of this line was "unsteady, incapable of prolonged exertion, addicted to low company, apparently incorrigible, violent and with degraded sexual instincts." The mother of his children was "a woman of immoral life, who eventually was said to have connived at the murder of her husband." Their eldest son was a brilliant soldier and a fairly successful statesman. One of his sons was a soldier and statesman of a higher order than his father, and two others were normal. One of these three had three sons of ability, a grandson eminent both for ability and character, a great-great-grandson of astute intellect and average character, a great-great-great-great-granddaughter, one of the greatest rulers in history (Queen Elizabeth) and many other normal descendants. The first of this line was Edward II. of England, and the Black Prince and Henry V. were in the line, as well as Elizabeth. There were defectives here and there, to be sure.

We must be very catholic in our eugenic judgments. There was some point to the remark of a University of Minnesota professor at the congress, namely, that he would rather be the son of a robust burglar than a consumptive bishop.

Medical Editorial Table

The Congress for Genealogy, Heredity, and Regeneration.

This new movement as exemplified in the recent congress held in Germany appears to be on a somewhat different plane from some of the movements in the interest of eugenics. It is avowedly committed to a purely scientific research. It appears that the chief if not the sole reason for the existence of the Congress is the desire to resubmit all our older learning concerning heredity to Mendelian tests. Nothing permanent can be done in the way of race regeneration until we can ascertain to what extent certain outcroppings are inevitable. Of what use to breed eugenically if a Mendelian recessive quality entirely unsuspected in the ancestry is to crop out in a child? Thus our family genealogies must be rewritten. A system of records for future use can and should be set in action at once, in connection with public schools, insurance, the army, etc. The newer movement is in sympathy with the English movement so far as this is carried out along the lines proposed by Galton. It is opposed to hasty attempts to regenerate the race before the accumulation of necessary data. We already know from available data that families, like individuals, do not bear prosperity well and deteriorate as their material resources improve, and also that the menace from mating of the unfit is not so great as it might at first thought seem, because here the death rate in the resulting progeny is phenomenally high.—(*Medical Record*, June 22, 1912.)

The Suppression of Tuberculosis.

The latest census reports show that there has been a measurable success in the crusade against tuberculosis. During the last decennial period there was a decrease of 18.7 per cent. in the death-rate from tuberculous affections in the registration area. The average of deaths annually from tuberculosis decreased during the same time from 1.969 per cent. to 1.603 per cent. in each million of the population. It is true that medical science has effected a reduction in the mortality of all diseases, but in the last decennial period the general death-rate declined only 9.7 per cent. Thus the tuberculosis mortality has been reduced at almost twice as great a ratio as that from all diseases and causes, and about 20,000 lives are now being saved annually which ten years ago would have succumbed to the tubercle bacillus. This gives hope of still further advances. The extension of the present wise and beneficent methods of prophylaxis and of cure should increase the good results. There are two weapons against tuberculosis which deserve special emphasis: education and the local hospital for the tuberculous. All the methods now in vogue should be maintained consistently and the paths of their dissemination reduplicated and broadened. Several states have enacted laws encouraging the establishment and maintenance of local hospitals or sanatoria in addition to the large state sanatoria. This movement should become general for it tends to secure segregation of the advanced cases which constitute the greatest menace to the community.—(*Boston Medical and Surgical Journal*, July 4, 1912.)

The Efficiency of Urinary Antiseptics.

It is commonly believed that hexamethylenamin is decomposed in the kidneys, or in the urine as soon as it is excreted, and that formaldehyde is set free, which acts as formaldehyde, or combines with any sodium which may be present, forming a sodium compound. Cammidge, however, has failed to find formaldehyde in the urine. He thinks the antiseptic

effects are obtained in some other manner. Jordan has found that the germicidal influence of hexamethylenamin amounts to little or nothing if the urine is alkaline (except where the colon bacillus is the cause of infection) or faintly acid, but becomes very powerful if the urine is rendered distinctly acid by the simultaneous administration of acid sodium phosphate. Conversely, the administration of potassium citrate diminishes the antiseptic power of hexamethylenamin. The bitartrate of potash may be used in place of the acid sodium phosphate. Hexamethylenamin does best in cases of cystitis not dependent upon distinct infection, in which the urine is alkaline and loaded with phosphates. Sandalwood oil, Jordan finds not to be an astringent—none of the essential oils possessing such an influence—and feeble as an antiseptic unless the urine is acid. It has no effect upon the colon bacillus but is distinctly germicidal as regards staphylococci. Ammoniacal change is retarded by it in proportion to the acidity of the urine. Salicylic acid has a rather mild inhibitory effect upon the staphylococcus and colon bacillus. In doses of twenty grains three times a day it distinctly delays putrefaction so that ammoniacal fermentation does not occur until three times the period in which it ordinarily ensues. Concerning the influence of benzoic acid and ammonium benzoate, Jordan found that there is an increase in antiseptic power if the urine is highly acid, but he questions whether this result is not due more to the acidity than to the influence of the drug.—(*Therapeutic Gazette,* June 15, 1912.)

Infant Mortality.

Jacobi believes that "every case of death from lack of breast milk should cause a trial for homicide against a doctor or midwife or mother." To the prevailing notion that many women cannot nurse their offspring, he answers that "one hundred per cent. of our women can be made to nurse, even the fashion and flower of the land." The great fact to be borne in mind in considering this matter of infant feeding is that *the maternal milk protects the nursling against disease.* This fact throws upon those who advocate artificial feeding, which affords no such protection, the responsibility for the infant's death where the maternal milk would have prevented it. The profession as a whole must realize its moral responsibility and use its powerful influence to prevent wanton sacrifice. How does milk acquire its protective virtues? Because of the state of overactivity of the ductless glands, particularly the thyroid and adrenals, in the maternal organism, and the direct participation of their internal secretions in all immunizing functions. In French cities the death rate among breast fed foundlings is from thirty-two to thirty-five per cent. Among artificially fed infants of the same class it is from fifty to eighty per cent. Three decades ago the mortality among foundlings in New York city was 100 per cent. until wetnurses were provided. Jacobi points out that during the siege of Paris, while the general mortality was doubled, that of infants was lowered twenty-six per cent. because mothers, through the lack of cow's milk, were driven to nurse their babies. During our famine of 1860, in the cotton district, the mortality among infants was reduced one half, because the deficiency of food forced all the mothers to nurse their babies. Other facts are as follows: Intestinal disease killed 7.09 per cent. of breast fed infants in Berlin during 1895 and 1896, while those artificially fed gave a mortality of 38.6 per cent., other diseases showing an equally suggestive ratio; bronchitis and pneumonia from 5.6 to 39.6 for example. Infants below one year are but slightly susceptible to certain infections. Ehrlich and Brieger demonstrated in 1892 that certain toxic substances, ricin, abrin, and tetanus toxine, injected into mice, endowed the milk of these animals with the power of protecting the offspring of other (unprotected) mice against the action of these poisons. In 1896, Schmid and Pflanz, having injected blood serum derived from a parturient woman who had received injections of antitoxine into guineapigs, found these animals immune to fatal doses of diphtheria toxine. In 1905, La Torre, having administered diphtheria antitoxine to wetnurses, ascertained that the blood of their nurslings possessed increased antitoxic power.—(*New York Medical Journal,* July 6, 1912.)

Medicine.

Beverley Robinson, of New York (*American Medicine,* June 1912), advocates the medical treatment of appendicitis in a larger proportion of cases. It remains to be proved, he thinks, that first or second attacks are followed by others, and whether such attacks are graver, or less so, if they occur. In any case, he thinks that they would not be really dangerous to life in a very large proportion of cases if they were properly treated medically. He quotes Sir G. T. Beatson approvingly. Beatson thinks it injudicious to interfere surgically during the acute stage of the disease as a rule. He thinks that such interference jeopardizes life. Beatson operates after the subsidence of all acute symptoms and his mortality has been but 3.3 per cent. Immediate operative interference in all cases, as practiced by some of his colleagues, gives a much higher mortality. Beatson believes in careful, sane medical management of acute appendicitis. Robinson maintains that appendicitis should not be regarded as a surgical disease more than, or even as much as, it is a medical affection. If conservative views ever come to prevail there will be a great diminution in operations. When they are performed, hurry, nervous excitement and the shock consequent upon hasty removal from home to hospital, with risk of extension of peritonitis due to operative transport of poisonous bacteria, will be reduced to a minimum.

Much Needed Dress Reform.

Reform in feminine dress must receive the attention of every thoughtful person. It is inconceivable that modest, pure minded women will be willing to adopt styles that admit of conclusions concerning their morals so contrary to their real intentions. It is well enough for the superior-minded purists to say that "to the pure all things are pure," and that the so-called evils of feminine dress are born in the minds of the lascivious and lustful. Some of this may be true, and womankind has little to fear from most men, no matter how they dress. But every medical man of large practice and experience knows only too well the fires of perversion kindled by the present dress of young, voluptuous females. Freud's studies showing the sexual origin of countless nervous and mental affections emphasize this and show that immodest dress is responsible for many a girl's downfall. Good women—and thank God, most women *are* good—will refuse to wear extreme and immodest apparel when they realize what construction is placed on their bravado or imprudence by mankind in general. Our only hope is that thinking men and women will awaken to the great importance of the subject and do their part in spreading the gospel of dressing modestly and decently. Let a certain class of femininity go to the extremes of immodesty and indecency, if they will, but not those who know the real significance of modesty and chastity.—(*American Medicine,* July, 1912.)

The ideas expressed herein meet with our emphatic approval and go hand in hand with the editorial comments on the "Curse of Fashion" in THE MEDICAL TIMES for May.

The *au fait* feminine dress of to-day has all the elements of vulgarity. The Parisian fashion setters would have us live in a petticoatless age, in which display of figure lines is the height of ambition. A well-known settlement worker on New York's great East Side, said, in a recent article, that the horrors of present day dressing among women and the prevalence of the sensuous and obscene "bunny hug" and "turkey trot" in the dance hall are ruining thousands of young working girls, who ape their more fortunate sisters of Fifth avenue and the upper West Side.

THE KALLIKAK FAMILY.

In the recent symposium on eugenics in THE MEDICAL TIMES, which attracted such widespread notice, reference was made to the notorious Jukes family. Indeed no eugenic discussion seems complete without a reference to this tribe which probably furnished society with more degenerates of different varieties than any other known family.

It has remained for Dr. H. H. Goddard, whose research work at the New Jersey Institution for the Feebleminded, at Vineland, has caused such favorable comment, to discover a counterpart of the infamous descendants of "Old Max" Jukes.

Under the title of "The Kallikak Family," the Macmillan Company is bringing out this month Dr. Goddard's book, and we are privileged from a perusal of the advance sheets to present a brief resumé of the contents. The name of "Kallikak" is fictitious, but every other statement is true. The story is based on "Deborah Kallikak" now and for many years past an inmate of the Vineland institution:

When Martin Kallikak, Sr., of the good family, was a boy of fifteen, his father died, leaving him without parental care or oversight. Just before attaining his majority, the young man joined one of the numerous military companies that were formed to protect the country at the beginning of the Revolution. At one of the taverns frequented by the militia he met a feeble-minded girl by whom he became the father of a feeble-minded son. This child was given, by its mother, the name of the father in full, and thus has been handed down to posterity the father's name and the mother's mental capacity. This illegitimate boy was Martin Kallikak, Jr., the great-great-grandfather of Deborah, and from him have come four hundred and eighty descendants. One hundred and forty-three of these, we have conclusive proof, were or are feeble-minded, while only forty-six have been found normal. The rest are unknown or doubtful.

Among these four hundred and eighty descendants, thirty-six have been illegitimate.

There have been thirty-three sexually immoral persons, mostly prostitutes.

There have been twenty-four confirmed alcoholics.

There have been three epileptics.

Eighty-two died in infancy.

Three were criminal.

Eight kept houses of ill fame.

These people have married into other families, generally of about the same type, so that now there are on record and charted eleven hundred and forty-six individuals.

Of this large group, two hundred and sixty-two were feeble-minded, while one hundred and ninety-seven are considered normal, the remaining five hundred and eighty-one being still undetermined. ("Undetermined," as here employed, means they are people we can scarcely recognize as normal.)

The author traces each descendant of Martin Kallikak, Sr., and the nameless feeble-minded girl and a ghastly story of degeneracy is revealed.

Although Martin himself paid no further attention to the girl nor her child, society has had to pay the heavy price of all the evil he engendered.

On leaving the Revolutionary Army, Martin married a respectable girl of good family, and through that union has come another line of descendants of radically different character. These now number four hundred and ninety-six in direct descent. All of them are normal people. Three men only have been found among them who were somewhat degenerate, but they were not defective. Two of these were alcoholic, and the other sexually loose.

All of the legitimate children of Martin Sr., married into the best families in their state, the descendants of colonial governors, signers of the Declaration of Independence, soldiers and even the founders of a great university. In this family and its collateral branches are only representative citizens, doctors, lawyers, judges, educators, traders, landholders, in short, men and women prominent in every phase of social life. They have scattered over the United States and are prominent in their communities wherever they have gone. Half a dozen towns in New Jersey are named from the families into which Martin's descendants have married. There have been no feeble-minded among them; no illegitimate children; no immoral women; only one man was sexually loose. There has been no epilepsy, no criminals, no keepers of houses of prostitution. Only fifteen children have died in infancy. There has been one "insane," a case of religious mania, perhaps inherited, but not from the Kallikak side. The appetite for strong drink has been present here and there in this family from the beginning. It was in Martin Sr., and was cultivated at a time when such practices were common everywhere. But while the other branch of the family has had twenty-four victims of habitual drunkenness, this side scores only two.

Feeble-mindedness, the price hundreds of people have paid for old Martin Kallikak's momentary indiscretion, makes paupers and criminals. Tax payers, "the ultimate consumers," pay a great price, not in heredity, but in dollars.

It is high time the public recognizes the tragedy of feeble-mindedness. It is difficult to appeal to man's love for his fellow man in taking up a great question, but when his pocket-book is touched, he evinces interest.

Let him therefore reflect on these facts. Dr. Goddard says that at least 25 per cent. of criminals are feeble-minded. One hundred admissions to the Rahway, N. J. Reformatory, taken in order of admission, show at least 26 per cent. of them distinctly feeble-minded, with the certainty that the percentage would be much higher if were included the border-line cases.

Out of 100 children in the Detention Home of Newark, N. J., 67 per cent. are distinctly feeble-minded. Of fifty-six girls from a Massachusetts reformatory out on probation, fifty-two of them are distinctly feeble-minded. This was partially a selected group, the basis being their troublesomeness.

The superintendent of Elmira reformatory estimates 40 per cent. of his inmates are mentally defective and it is believed fully 50 per cent. of the inmates of most penal institutions are feeble-minded. A large percentage of prostitutes are mental defectives.

What can be done to remedy this defect? Dr. Goddard favors segregation, colonization and sterilization. If colonies were provided in sufficient numbers to take care of all the distinctly feeble-minded cases in the community, they would very largely take the place of the present almshouses and prisons, and they would greatly decrease the number in insane hospitals. Such colonies would save an annual loss in property and life, due to the action of these irresponsible people, sufficient to nearly, or quite, offset the expense of the new plant. Besides, if these feeble-minded children were early selected and carefully trained, they would become more or less self-supporting in their institutions, so that the expense of their maintenance would be greatly reduced.

In addition, the number would be reduced, in a single generation, from 300,000 (the estimated number in the United States) to 100,000, at least,—and probably ever lower.

The other solution of this problem is to take away from these people the power of procreation. The earlier method proposed was asexualization, removing from the male and female the necessary organs for procreation. The operation in the female is that of ovariectomy and in the male of castration.

There are two practical difficulties in the way of carrying out this method on any large scale. The first is the strong opposition to this practice on the part of the public, though the new method of sterilization is extremely simple and effective, and the objection is the effect such procedure might

have upon society, when these low people were able to gratify their desires without fear.

We believe the evil consequences are more imaginary than real, since the feeble-minded seldom exercise restraint in any case.

Dr. Goddard concludes his intensely interesting and instructive book with these words:

The Kallikak family presents a natural experiment in heredity. A young man of good family becomes through two different women the ancestor of two lines of descendants,—the one characterized by thoroughly good, respectable, normal citizenship, with almost no exceptions; the other being equally characterized by mental defect in every generation. This defect was transmitted through the father in the first generation. In later generations, more defect was brought in from other families through marriage. In the last generation it was transmitted through the mother, so that we have here all combinations of transmission, which again proves the truly hereditary character of the defect.

We find on the good side of the family prominent people in all walks of life and nearly all of the 496 descendants owners of land or proprietors. On the bad side we find paupers, criminals, prostitutes, drunkards, and examples of all forms of social pest with which modern society is burdened.

From this we conclude that feeble-mindedness is largely responsibe for these social sores.

Feeble-mindedness is hereditary and transmitted as surely as any other character. We cannot successfully cope with these conditions until we recognize feeble-mindedness and its hereditary nature, recognize it early, and take care of it.

In considering the question of care, segregation through colonization seems in the present state of our knowledge to be the ideal and perfectly satisfactory method. Sterilization may be accepted as a makeshift, as a help to solve this problem because the conditions have become so intolerable. But this must at present be regarded only as a makeshift and temporary, for before it can be extensively practiced, a great deal must be learned about the effects of the operation and about the laws of human inheritance.

Typhoid Symptoms.

Abdominal pain as an initial symptom of typhoid fever is the subject of a paper by H. S. Carter, New York (*J. A. M. A.*, May 25), who gives the results of his studies of a large number of cases in the Presbyterian Hospital, New York, with especial reference to the presence of abdominal pain in the gall-bladder affections complicating typhoid. In four cases abdominal pain was observed as the initial symptom, and these are reported. In a total of 1,815 cases of typhoid occurring between 1897 and 1911, there were twenty-four cases of acute complicating cholecystitis, and of these, the four cases referred to formed a part and were the only ones in which pain was an initial symptom. Adding two cases seen in consultation makes twenty-six in all, and these are analyzed as follows: Eleven were males and thirteen females. Their ages ranged from 11 to 62 years. None gave a definite history of previous trouble. Less than a third were severe. In the other twenty-two cases the pain with evidence of gall-bladder involvement appeared from the seventh to the sixty-first day of the typhoid and in the average on the nineteenth day, lasting in most cases only a few days. In all, the pain was referred to the region of the gall-bladder and local tenderness existed in practically all. In eleven cases the gall-bladder could be definitely palpated and in all but two of these there was a large and palpable liver. There was jaundice in four cases. Except in some of the severe cases there was little increase of fever and in the majority there was no change in the leukocytosis. In the whole series there were three cases of complicating acute appendicitis, in one of which the abdominal pain from this cause was the initial symptom. In the whole 1,815 cases of typhoid there were twenty-six complicated by intestinal perforation, but in no one of these was the perforation the initial symptom. It is occasionally stated in text-books that such perforation may be the first recognized symptom of typhoid. This Carter considers true, but of rare occurrence.

Surgery

WHY EVERY CASE OF APPENDICITIS SHOULD BE IN THE HOSPITAL.

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Appendicitis! A magic word to the laity, a word that sounds mysterious and impresses us with a sense of awe. Who can say when the last word concerning this truly American affliction shall have been spoken. It is American because its very being, development and execution have originated in American minds, and it has become an affliction because most of us are but too prone to make this diagnosis of appendicitis, secure in the thought that if it should happen to be something else we have at least opened the abdomen and the operation itself assumes the character of an exploratory laparotomy.

It is not my purpose to go into the pathology of the disease nor to differentiate between catarrhal forms and the forms of empyema of the appendix vermiformis. If the surgeon should waste too much valuable time—time is valuable in appendicitis—debating in his own mind whether the symptoms are simply due to an incurvation or angulation of the appendix, or whether there is a stone impacted in its lumen, threatening at any moment to burrow its way into the free abdominal cavity, then indeed it were better for the patient that his surgeon operate in each individual case.

Those of us who have been fortunate enough to see many of these cases, not only on the operating table, but who have watched them as they lie in bed with "cramps in the stomach," those of us, I repeat, know full well the ominous import of the leaping, breathless pulse and the steadily rising temperature. We know that inflammatory conditions may exist and do persist for long periods of time, causing the patient a twinge of pain now and then, and usually relieved by the favorite remedy of the home, a dose of salts. But the appendix is like a bomb, with the difference that there is no time-fuse attached to it. The fuse is slowly burning and if we are not carefully on the qui vive the explosion takes place and the appendix, similar to the bomb, bursts. The stride to destruction, once it has begun, is extremely rapid. Three or four hours may be the span of time that decides the fate of the patient. We have all seen it, and we have all decided not to let matters come to such a pass again. Is operation imperative, then, in all cases?

Many patients refuse operation. Sometimes the patient is willing and the relatives are the antagonistic element. The physician is implored to try something else. More time is lost. It is not pleasant to be operated upon and the layman is not to blame for his opinion. He has not been educated to understand the belligerent nature of an attack of appendicitis. He simply knows that he has a pain in his side; he may not as yet feel very ill; he knows that Mr. B. has had an attack of appendicitis and was cured by rest in bed and an ice bag. Therefore, why shouldn't he be cured in like manner?

It may seem as though I were straying away from my subject. But I am coming to the point. I have stated that an attack of appendicitis may become extremely dangerous to the life of the patient within several hours. I admit that there are many cases which recover from the present attack and lead to chronic cases. I am trying to establish an intermediate course of treatment that will benefit the patient, a course of treatment that will *protect* the patient.

Let me cite a case in point before I go any further, a case I remember most distinctly of the many, because of its tragedy.

The young man had been under the care of his family physician for several weeks undergoing treatment in the form of oil enemas for colitis. Pain developed in the right side at the

typical point, and a diagnosis of appendicitis was correctly made. But the thought of operation was brushed aside, for the patient was feeling comfortable. An ice-bag had relieved the sensation of distress and there seemed to be no danger. Twenty-four hours later a hurry call was sent for the surgeon. When he finally arrived he was unable to find anything serious by abdominal palpation; but rectal examination with his finger disclosed a large mass, hard and irregular. Immediate operation was insisted upon; the ambulance was called and the patient rushed to the hospital. When the abdomen was opened a large fecal stone was seen protruding into the peritoneal cavity. The appendix was in shreds; there was no free pus, but the intestines felt slimy and sticky to the touch and appeared lifeless. Did the continued oil enemas have an evil effect upon the muscular structure of the gut?

The patient did well for nine days. On the tenth his pulse became extremely rapid; temperature 104°, and later 105°. He became delirious and finally died in an exhausted state. This case would have been saved if the operation had been performed an hour, possibly a half-hour, sooner.

Therefore I have made it a rule to advise all cases of appendicitis, no matter what their intricate nature, to repair to a hospital during the entire period of the attack, and stay there at rest in bed and under *continuous medical surveillance*. Then if *operation becomes imperative it can be done immediately*, and the needless risk taken in many cases is avoided. Often the surgeon is otherwise occupied; he may be at the other end of the world, figuratively speaking. The relatives begin to argue pro and con, another consultant may be called in advising removal to some other temple of healing, when taken all in all, the operation is a simple one, which can be performed as well by the house surgeon as by the surgeon who is taking care of the case. When it is a question of a life at stake it is foolish to haggle with false pride. Your patient may be disappointed in you for the time being but the result will convince him that his trust in you was not ill placed.

I will not say anything about the so-called forms of appendicitis which are "suggested" to patients by unscrupulous physicians, as that furnishes material for another article, which I hope soon to lay before the idealists of the profession, those who stand as soldiers by the gate to the Valley of Death.

Tonsillotomy or Tonsillectomy?

Ernst Danziger, of New York (*New York Med. Jour.*, June 1, 1912), pleads for a careful differentiation of operative indications. Routine enucleation is not justified by the facts which call for consideration. The proper indications for enucleation are:

First. Cases of buried tonsils where the pillars and the plica—that is the fold of mucous membrane which connects the two pillars below—envelop the tonsils almost entirely.

Second. In cases of small atrophic tonsils which cannot be removed otherwise.

Third. In cases of suspected tuberculosis of the tonsils.

Fourth. In adults, recurrent attacks of circumtonsillar abscess.

Fifth. Malignant affections are self-evident indications for this operation.

Where the hypertrophy is physiological and is merely causing cough and mechanical difficulty in swallowing tonsillotomy suffices, care being taken to free the anterior pillar, so that all the obstructed crypts are opened after the adhesions are broken up. These obstructed crypts occasion anemia and recurrent attacks of tonsillitis, as well as circumtonsillar abscess, the pus in the obstructed crypt breaking into the fossa supratonsillaris.

It is to be remembered that the tonsils play a prominent part in the production of immunity, since toxines can enter the circulation through the crypts, while the bacteria cannot.

The most important step in enucleation is the thorough freeing of the pillars from the tonsil. A tonsil knife is introduced between the anterior surface of the tonsil and the pillar at the upper pole of the tonsil and existing adhesions cut through, the pillar being pulled away at the same time from the tonsil, to avoid cutting into tonsillar tissue. If the plica is overdeveloped it is cut into. The tonsil is pressed downward from its upper end with the index finger until it hangs by its lower pole. It is then caught with a volsella and cut off with scissors, knife, tonsillotome or snare. In case the upper end of the tonsil cannot be reached by the finger a sharp enucleator is used to shell it out, the finger completing the removal. The snare ought to be used under the guidance of the eye, and only after the most complete separation of the pillars—otherwise a part of the pillars or soft palate may be taken out with the tonsil.

Dangers of Infected Alveolar Areas.

M. L. Rhein, of New York (*J. A. M. A.*, August 3, 1912), points out the serious effects upon the health of infected areas around the ends of the roots of teeth. The spongy character of the alveoli in which the ends of roots are embedded leaves them especially vulnerable to purulent invasion. The majority of these infections are alveolar abscesses arising from the death of the pulps of the teeth, though there are also pericemental abscesses, existing coincident with living pulps which have not been infected. Ordinarily the pus makes its way into the mouth, permanent fistulous openings remaining. Sometimes, however, a blind abscess persists, the abscessed area undergoing fibrous encystment. Here there is no sinus allowing drainage into the mouth. The only apparent symptom is occasional tenderness over the diseased area, but this is not always present. This area usually increases in size. It may not cause discomfort for years. This is a very dangerous form of abscess, because of the ensuing toxemia, which is not apt to be referred to the true cause. Such a toxemia is apt to be slow and insidious. Gilmer, of Chicago, estimates on the basis of radiographs that 25 per cent. of the people have infected areas around the ends of the roots of their teeth. This condition is not due so much to neglect of the teeth on the part of the people as it is due to imperfect dental work. It is true that it is often difficult and sometimes impossible to remove every portion of organic material in the root canals and seal them with an impervious homogeneous filling. Too much dependence is placed upon antiseptics, none of which can supplant good dentistry. Endocarditis and its allied joint affections, pernicious anemia, nephritis, diabetes, nervous affections and many skin diseases, such as acne, eczema, herpes, psoriasis, urticaria and erysipelas, may all arise from alveolar disease. At the present day the radiograph gives us a clear picture of this field and makes a diagnosis comparatively easy. Superficial mouth examinations by physicians and incompetent dentists have for many years been the main reason why this important etiological factor has not been more considered.

Bleeding Tube.

A. Keidel, Baltimore (*J. A. M. A.*, May 25), describes an apparatus for obtaining specimens of blood which he claims will give constant and reliable results and obviate many difficulties experienced by physicians in general practice in obtaining specimens to send to laboratories for examination. The essential feature of the apparatus is the substitution of a closed vacuum chamber for the cylinder and piston of the ordinary aspiration syringe. More than 200 of these bleeding tubes have been used with great advantage and it has not been necessary in any instance to reject a specimen coming to the Johns Hopkins laboratories in one of these tubes. The blood is never exposed to the air until the ampule is opened in the laboratory. Many specimens have been shipped distances of 800 to 1,000 miles and arrived in perfect condition. It provides an uncontaminated specimen and is cheap enough to throw away after being once used.

Practical Medicine

The subjoined paragraphs, chosen at random from the American and foreign medical press, touch upon points of real interest.

Chronic habitual constipation is mainly of two types—loss of normal irritability or motile irritability, and loss of normal stimulus. The first may be due to an abnormality in the mucosa, musculature or nervous mechanism. Mucous membrane lesions are seen in chronic intestinal catarrh and in atrophy of the mucosa, which may be of itself an independent infection. Peritoneal inflammation can also involve the intestinal muscle and paralyze it. Muscular insufficiency without inflammation calls for stimulating tonic treatment. Decreased normal stimulation of the intestine is largely due to an overconcentrated food-supply and diet, lacking in substances that exercise a mild irritant action, such as are found in the indigestible parts of the food, as coarse vegetable fibers, etc. The addition of these to the diet and regularity of habit are to be advised.

In infantile eczema allay the weeping with astringents or a drying powder. In the acute form zinc paste and starch removed the third day with olive oil is of value, or Jadassohn's lotion of zinc oxid and starch, five drams each; glycerin, three and one-half drams; distilled water, three ounces, applied with a large brush several times a day. The lead-water liniment of Boeck is sometimes to be preferred. Sometimes all these methods fail and tar has to be used to allay the itching, but this only when absolute dryness is established and hyperemia not prominent. A less irritant action is possessed by liquor carbonis detergens, which can be used in an ointment, mild at first, and afterward stronger, and in solution. One may be forced to go still further with stronger preparations of tar and phenol, but great caution should be exercised in their employment.

From the results of investigations it appears that the complement fixation test can be utilized for the diagnosis of Malta fever, and in view of the occasional unreliability of the agglutination test the complement fixation will be of great advantage as an adjunct in the diagnosis of the disease.

Typhoid vaccine as prepared at present—by heat—is not perfectly reliable after a few months and should never be used if a year old. The blood test by which the physician is to test the results of his vaccination is the Widal reaction, which ordinarily becomes positive in from five to ten days after the first dose and grows stronger with the second and third doses. Maverick reports a case (*J. A. M. A.*, June 1) in which it failed to appear in a patient after successive vaccinations, though the same vaccine was given to four of his brothers with positive results. Another vaccine from a perfectly reliable source was followed by no marked agglutination, though slightly less motion. The question whether this patient is immune or hypersensitive is interesting. The effect of each vaccination on the blood evidently caused a slight increase in the agglutinins and it is reasonable, Maverick thinks, to admit that continued inoculations might have produced a good Widal.

Slight eructation of air after meals is perfectly normal. True fermentation may be present in stasis, but this is comparatively rare. It is usual accumulation instead of excessive production of gas in the stomach which gives rise to this annoying symptom commonly called "gas on the stomach." When gas on the stomach annoys a patient he usually is nervous and has too much acid. (Give him alkalies, proper diet and general treatment.)

Fresh air benefits patients with other forms of tuberculosis, as much as it does those with tuberculosis of the respiratory type. It has no more influence on the lungs than on the rest of the body. Coolness, dryness and motion of the air are factors to be sought after. It has long been a current belief that one hour of driving is worth two sitting on the porch. The active motion of the air with attendant evaporation of moisture causes much of the sensation of well-being from good ventilation. Dryness of the atmosphere is important, but is of itself of little avail.

Pyelitis of the pseudomalarjal type may be divided into acute and chronic. The acute cases may be of short duration or last for weeks while the patient is being dosed with quinin. The chronic cases give rise to lesser symptoms, such as periodic aching of the limbs, chilly feelings, night sweats, etc. The urinary findings may be insignificant and catheterization is absolutely necessary in women to avoid contaminating cellular elements from the external genitalia. The real difficulty in chronic cases is not so much in excluding malaria, which can be done by a blood examination, as in excluding pulmonary tuberculosis, which is always suggested by the clinical history. In acute pyelitis the paroxysms may be identical with those of malaria. Chronic pyelitis gives symptoms commonly attributed to chronic malaria, which is not a common trouble unless in neglected cases. While the clinical features of malaria and pyelitis may be almost identical, the differentiation is not difficult.

Thymol is used in Italy to advantage in the treatment of hookworm disease. One writer reports giving 2 gm. every two hours until six doses had been taken, always in capsules, without serious disturbance. These doses are large, however, and while we believe the drug possesses unusual efficiency in hookworm disease, we suggest much smaller amounts.

Field of New York notes: "We cannot at the present time accept a positive Wassermann reaction in a case of lead-poisoning as proving a specific infection, and, on the other hand, we cannot ignore its presence. Until many observations are made and much experimental work has been done, it will be best to simply keep this fact in mind in interpreting positive reactions in individuals exposed to lead."

About 99 per cent. of cases of belching is due to the escape of swallowed atmospheric air and not a sign of any pathologic condition. One swallows air with food and drink, and this accumulates and forces its way through the cardiac orifice. When belching is a symptom of gastric or general disease a nervous hyperchlorhydria is the explanation. The accumulation of gas in the stomach is not dangerous except in elderly patients, in whom arteriosclerosis or some heart lesion or some other serious condition exists, of which the flatulence is a complication.

An exchange says that fuchsin is a germicidal agent more powerful than phenol and has a greater diffusibility and is less toxic. It has a marked stimulative action on epithelial and granulation tissue growth.

The toxemia of the eclamptic mother may be transmitted to the child. A certain proportion of such children may be relieved and their lives saved by careful attention to the elimination of the toxin through the bowel and the kidneys. It is a mistake to put the child immediately to the mother's breast. Employ a healthy wet-nurse. Small divided doses of calomel and bicarbonate of soda, with an initial dose of castor oil and plenty of sterile water to flush the bowels are valuable. Weak-

ened solutions of fennel or chamomile with a little sugar for a few days are also helpful and if the temperature rises, two or three drops of spirits of niter for one or two doses to establish the urinary excretions. Overdosing should be avoided, especially of calomel, as bowel hemorrhages are not uncommon. Warm baths and keeping the body warm are of the utmost importance.

In conditions due to excessive viscosity of the blood citric acid and the citrates are very useful. Viscosity of the blood is due to its colloid constituents and is distinct from coagulability. While they may be coincident they are independent and one may be high while the other is low. The obstructed circulation from viscosity favors thrombosis. Apparently viscosity may be increased above the average in certain localities in the body. Citric acid and the citrates have been used with success in cases of threatened eclampsia, in edema of the pharynx and in rheumatic and gouty conditions.

Pure peribronchial tuberculosis is nearly twice as common as the apical form and is a condition of great clinical importance because it may reach an advanced stage without revealing any signs of its presence to the usual methods of physical examination of the chest. The disease may advance steadily, and the physician, finding no abnormal signs at the apices, may not appreciate the true state of affairs. The X-ray offers the only method of determining the presence and extent of this form of tuberculosis.

To examine the colon for retained feces place the soft part of the four fingers of both hands midway between the umbilicus and ensiform cartilage, then, by pressing them downwards towards the umbilicus, the contracted colon can be felt to give the sensation of a tense cord. Another method is to grasp the trunk with the two hands and palpate with the thumbs. The descending colon with the splenic angle can be easily defined. The pelvic colon can only be satisfactorily examined per rectum and bimanually. It is important to examine the ileum as it enters into the cæcum at the same time.

Laird, of Ireland, believes in the importance of decalcifying agents in the treatment of rheumatism. His favorite treatment follows: Rest in bed. Clear out the bowels by a small dose of calomel, followed by a saline, and keep them gently open each day. Then the following mixture is given during effervescence every third or fourth hour:

℞ Potass. bicarb. ..... ʒij.
Tinct. aconit..... ..... ♏viij.
Tinct. aurant..... ʒj.
Aq. chloroform.....ad ʒviii.

Sig.: Two tablespoonfuls to be added to the same quantity of water in a tumbler, then add one tablespoonful of fresh lemon juice, and drink while effervescing.

A popular foreign method of treating sciatica includes hydrotherapy and massage, hot air baths, electricity and injection treatment. The latter includes the introduction of a novocain solution into the posterior dural space near the lumbar roots. It is an urgency treatment for violent paroxysms, to gain time and to institute radical treatment. For the same purpose physiological serum with stovain has been used. Infiltration of the sciatic consists in introducing into the nerve or its neighborhood large amounts of a saline solution, usually isotonic physiological serum. The severe pain disappears almost immediately.

To prevent infection in meningitis by contact, the nasopharynx should be cleansed several times a day by breathing for a few minutes a little of the following mixture, poured into a bowl which is placed in a basin filled with very hot water:

℞ Iodi ..... ʒiij.
Guaiacolis ..... gr. xxx.
Acidi Thymici ..... gr. iv.
Spiritus Vini Rectificati..... ʒvii.

Misce. Fiat inhalatio.

Besides this, the tonsils should be swabbed three or four times a day with iodized glycerine, 1 in 30.

In rhinorrhœa the discharge is largely serous, merely wetting the handkerchief, staining but little, and not stiffening it. In chronic rhinitis, and in many cases of hypertrophic rhinitis, the flow is mostly a mucous fluid which adheres to the handkerchief and agglutinates its folds, but does not discolor. In purulent rhinitis the discharge is yellow-colored and sometimes offensive, while in chronic sinus disease the outflow is offensive, discolored to a green or yellowish green, and it stains, starches, and agglutinates the handkerchief. In atrophic rhinitis masses of foul-smelling crusts are often expelled from the nostrils.

Recurrent head colds and nasal catarrh are most often caused by abnormal anatomical conditions in the nasal cavity. In chronic rhinitis the inferior turbinals are too rosy-red, rotund and resilient, secrete too much sero-mucous discharge, and the nasal passages are diminished and partially blocked, especially on lying down. In hypertrophic rhinitis the turbinal is enlarged, but more firm in its consistency, less red and resilient, but still it over-secretes. In atrophic rhinitis the turbinal is non-existent or very small and usually covered with septic crusts.

To cleanse and moisten the nasal cavity this prescription is recommended:

℞ Sodium chloride
Sodium salicylate
..... aa grs. xlv.
Sodium borate
Potassium chlorate
..... aa grs. xcvi.
Glycerine ..... ʒi.
Water ..... ʒvi.

M. Sig.: Two teaspoonfuls should be added to one ounce of warm water and used to spray or sniff up the nostrils occasionally.

When fetor is present a combination of carbolic acid, 1 grain; and sodium bicarbonate, 4 grains, to the ounce of warm water is recommended. Sulphate of sodium, 20 grains to the ounce, is also advantageous for dissolving away purulent discharge.

The baldness supervening after severe fevers, notably in typhoid fever, as a rule always cures itself. The growth of hair may be promoted by the use of the following lotion rubbed into the scalp:

℞ Pilocarpinæ Hydrochloridi ..... gr. viij.
Olei Santalis
Olei Gaultheriæ
.....aa ♏v.
Glycerini
Spiritus Camphoræ
"Rum"
.....aa ʒj.
Spiritus Vini Rectificati (80°)..... ʒij.

Misce. Fiat lotio.

Headache often closely simulating the headache of eye strain and in some cases accompanied by photophobia is a very common symptom of intra-nasal pressure.

Non-suppurative disease of the accessory cavities of the nose is more mommon than is ordinarily supposed. It has symptoms that are obscure and frequently causes more distress to the patient than is usual in the purulent type. The cause is not well understood but probably closure of the ostium with resulting negative air pressure is an important element in the etiology.

Cancer of the colon causes symptoms very similar to those of ulcerative colitis, but in most cases the distinction is easy enough, as in the case of cancer the symptoms are chronic rather than acute; they date back for some months, and moreover the diarrhea though frequent is not so profuse as in ulcerative colitis. Under certain circumstances, however, the symptoms produced by a cancerous stricture in the bowel may closely simulate ulcerative colitis. Especially is this the case when there is a tight stricture and the bowel above it has become dilated and ulcerated. The symptoms are then due rather to the distension ulcers in the colon than to the growth itself. A large soft and rapidly breaking down growth may also closely simulate ulcerative colitis.

All tumors of the testicle must be regarded as malignant. The history of previous venereal disease, the association of the swelling of the testicle with an injury, the length of the history dating perhaps from childhood, must not be allowed to outweigh clinical evidence. Always suspect a tumor of the testicle when there is an oval swelling which is not translucent and comparatively painless.

Sir J. Sawyer says that in wasting disorders, in various forms of anemia, in adynamic varieties of rheumatism and in the neurasthenic manifestations of neurotic persons he has found the continued ingestion of cane sugar markedly beneficial, increasing weight and power, and appearing to act not merely as a nutrient but also as a tonic.

Hochwart states that of his tobacco-using patients about one-third have some nervous complaint, although some of them are of an extremely light and transitory nature; of his heavy smokers, more than one-half complain of unpleasant, rather stubborn nervous symptoms. Especially is this true of the heavy cigarette smokers, the nature of their trouble apparently being more obstinate and longer lasting than that of the cigar smokers. Frequently these patients complain of palpitation of the heart, general nervousness, headache, vertigo, and not infrequently of insomnia, tremor, specks before their eyes, dyspepsia and gastro intestinal disturbances. Many of the patients report to him that owing to one or more of these various complaints they had been forced to give up the use of tobacco to a greater or less extent.

French authors report success with lumbar puncture in typhoid fever. They think that meningeal hypertension may be present in various acute infections without producing a definite group of symptoms pointing to the meninges, and urge, in view of the readiness with which lumbar puncture is now performed after a little practice, and its harmlessness, that this measure be availed of in infections when there are present evidences of meningeal hypertension, particularly violent and persisting headache, even when they occur as isolated symptoms.

In examining the patient about to be anesthetised, the general appearance, the apparent age, degree of robustness or anemia, and temperament should be noted. Physical examination reveals the condition of the heart, arteries, lungs, bronchi and mouth. Inquiry should be made regarding cough, use of tobacco and alcoholic stimulants, or any other narcotic.

In certain cases of nephritis and in some heart lesions the administration of digitalis is not accompanied by a rise of blood pressure. In these instances improvement usually does not follow its use; indeed, the bad symptoms often are intensified; hence the state of the blood pressure and the manner in which it is influenced by digitalis, are fairly safe guides as to the indications for the drug.

Even in the severest forms of neuralgia alcohol injections are of distinct value. A study of upward of six hundred cases seems to demonstrate a large percentage of cures and the relative harmlessness of the procedure. It is possible after repeated injections in the nerve to bring about a complete degeneration of its fibers. This method may also be used in intercostal and root neuralgia with distinct advantages, and also without danger.

In administering chloroform a very dilute vapor should at first be used, to establish tolerance and to prevent possible laryngeal spasm with reflex inhibition of the heart and respiratory centers. The nervous structures are affected in definite order. The higher cerebral nerve centers are the most sensitive, next the lower ones, and lastly the spinal cord. Pupillary, nasal and anal reflexes often persist in deep narcosis. The respiratory and vasomotor centers are quite resistant, fortunately for the anesthetist.

The rapid rise and maintained high pressure met with in uremia, Stokes-Adams syndrome, angina, migraine seizures, and other painful spasmodic affections are very probably due to vasomotor spasm, since both pain and symptoms ameliorate with the fall of pressure.

In a study of the blood and feces of 70 typhoid cases, an Italian writer found in the feces a large number of forms intermediate between the typhoid bacillus and bacillus coli. He also found at various periods of the disease in the same individual different types of micro-organisms. It is suggested that from various influences or spontaneously there may occur a gradual transformation from one type of micro-organism into another.

In cases of ulcerative colitis a sigmoidoscopic examination affords the only means we have of distinguishing this condition from cancer or villous tumor of the rectum, or from multiple papilloma of the rectum—conditions which exactly simulate ulcerative colitis in symptomology.

In starting the anesthetic it is not unusual to see the doctor drop the mask flat on the face, commence pouring from the bottle, at the same time telling the patient to "breathe deeply." This procedure is sufficient to upset any patient. By telling the patient to breathe naturally and holding the mask two or three inches from the face at the start, the disagreeable smothering sensation—coughing and gagging—will be done away with and narcosis hastened. The danger resulting from the cumulative action of the drug, which comes from supplanting residual air in the lungs with the anesthetic, when telling the patient to breathe deeply, will be minimized.

In tuberculosis in children the prognosis depends on the age of the child, on the clinical course and the localization of the infection. Children who have no temperature and whose body weight increases and in whom the tuberculosis is limited to the lymph glands generally recover. This also applies in the cases in which the disease is confined to the eyes, bones and joints. The widespread tuberculosis, involving the lungs and the internal organs, is generally fatal.

Uncontrollable vomiting can sometimes be checked with a hypodermatic injection of ten drops of a one per cent. adrenalin solution.

A gangrenous gall-bladder mucosa is usually easily stripped out (Mayo). It is a quicker proceeding than cholecystectomy, and provides more rapid healing than mere cholecystostomy.—(*Am. Jour. Surg.*)

Current Orientation

VACCINE THERAPY IN TYPHOID.

This subject is of growing importance and in the past two years remarkable progress has been made toward perfection. The *Interstate Medical Journal* for June reviews the literature minutely and we abstract the more salient features of this long and comprehensive paper.

The first subject considered is preparation of the vaccine. Major F. F. Russell, U. S. A., a leading world authority on the subject, uses an organism from an old culture which has ceased to be pathogenic, and which produces an abundant growth on agar. It is inoculated on agar in specially constructed flasks giving a known surface of media. After eighteen hours' incubation the agar cultures are washed off with the normal salt solution, put into flasks, and the culture killed by subjecting it to 55-56° C. over a water-bath for one hour. While sterilization is taking place, a count is made of the bacterial suspension for the purpose of standardizing, after which it is diluted with normal salt solution, so that 1 c.cm. shall contain 1,000,000,000 bacilli, and 0.25 per cent. tricresol is added. It is tested by bacteriological methods for both aerobic and anaerobic bacteria, and, as a further measure of safety, inoculations are made into guinea pigs. It is then put up in sealed ampoules containing 1 to 25 c.cm.

The immunizing dose of the vaccine is given in three injections at intervals of ten days. The first injection is of 0.5 c.cm., while the second and third are of 1 c.cm. each. The injection is given with an ordinary hypodermic syringe into the deltoid muscle near its insertion. The reaction following the inoculation is usually not severe. Locally there is an area of hyperemia around the wound made by the needle, and more deeply there is a sharply circumscribed area of induration, which is somewhat tender. Movements of the arm, calling the deltoid into play are painful, and there is some stiffness. Exceptionally there is some swelling and tenderness of the axillary glands, but no case of suppuration has been noted. The more severe reactions, classed as moderate, show a fever up to or above 101° F., chills, slight nausea, profuse perspiration and some nervous disturbances. The onset of the reaction is usually within six hours; it is at its height in twelve hours, and has subsided in twenty-four hours, leaving only a little stiffness of the arm.

The duration of immunity conferred by the inoculations is an important matter not yet settled. Firth, after a statistical study of the question on the British Colonial Army in India, places the period of protection after the first immunization at thirty months. Leishman thinks the reinoculation should be given after two years. In the United States army the enlistment period is three years, and for the present the orders are that the inoculation shall be given at each enlistment.

The treatment of typhoid by inoculations is still in the experimental stage. To show how unsettled this practice is, it need only be observed that the dosage given and recommended by different writers varies between 1,000,000 and 1,000,000,000 bacilli. No reports of large numbers of patients treated by individuals are yet available, but those to the number of thirty or forty have been reported by a few. The total number of cases in the literature will probably not exceed 400, but most of these have been closely observed by most competent men. The sum of the opinions of these men is unquestionably favorable.

Inoculation shortens the fever period, and the total duration of the disease; it reduces complications and relapses markedly; the mortality of all cases reported is 4.9 per cent. A distinct crisis, following the second inoculation, is reported by Meakins and Forster, of Montreal, to take place in 50 per cent. of their cases. It is interesting that these men gave the largest dosage of the vaccine—from 1,000,000,000 to 2,000,000,000 bacilli. Very pronounced amelioration of headache, gastro-intestinal symptoms and toxemia is usual. It has apparently been directly life-saving in a few, all but hopeless, cases, though ordinarily it has little effect on such. All agree, however, that even in the cases in which it causes no improvement, it has done no harm.

The conclusions to be drawn from all this evidence are of a definite character. The case for typhoid immunization, both in prevention of the disease and in decreasing case mortality, is a strong one. It is with reason that the Surgeon-General of the army has given it as his opinion that the protection afforded by vaccination against typhoid would compare favorably with that against smallpox.

In treatment the vaccine has yet definitely to prove the extent of its worth, though it has the ray of hope of an agent which will reduce typhoid mortality below its heretofore irreducible minimum.

Fletcher (*J. A. M. A.*) says that recovery from any infectious disease depends on two factors—the destruction of the causative organisms present in the body, and the elimination or neutralization of the toxins, produced by them. With this as a working basis, a typical case of typhoid fever in a non-immune may be considered from its onset to a favorable termination with reference to these two factors alone, ignoring the well-known pathological anatomy. Every non-immune or normal person must possess cell-receptors capable of combination with typhoid toxin, in order to present the typical symptoms of the disease. He must also possess either opsonin capable of actuating phagocytosis of the typhoid bacillus, or a bacteriolysin or agglutinin capable of accomplishing its destruction. In other words, a man, who presents toxic symptoms as a result of typhoid infection, has killed enough bacilli to liberate their endotoxin. Let us follow this process.

Our subject secures a good dose of virulent typhoid bacilli. The first thing that happens is the destruction of a few of these organisms by the natural bacteriolytic forces, possessed by all individuals, with the liberation of their endotoxin. To this endotoxin the body reacts, producing a rise in temperature—very slight at first, because the dose of toxin liberated is small, on account of the feeble bacteriolytic power of the body. This toxin, besides causing a febrile reaction, excites the formation of a specific antibody to it and an antitoxin is produced, which, as it "fixes" the toxin present, causes a subsidence of the fever. If all the bacilli of the initial infection were killed in one lot, our case of typhoid would end here. Unfortunately this does not occur. The infecting dose of organisms being more than the feeble natural defenses of the body can handle, they multiply rapidly, and if, on the other hand, body defenses were exhausted with the killing of the first lot and not reproduced, their rapid increase would result in mechanically obstructing the circulation. Fortunately, however, this also does not occur; for besides the liberation of the endotoxin from within the cell-capsules of the destroyed bacilli, substances exciting the production of both agglutinin and bacteriolysin are also liberated, and the body is thus enabled to reproduce its antibacterial forces and attack the descendants of the unkilled bacilli of the initial infecting dose. The gradually rising temperature in the first week, then, may be said to be due to increasing doses of typhoid endotoxin liberated as the result of the destruction of increasing numbers of bacilli, by an ever-increasing bacteriolytic agent.

During the second week the condition reaches nearly a balance; that is, the production of antitoxin occurs nearly as rapidly as the toxin is liberated, but just enough later, or in insufficient quantity, so that the temperature remains practically uniformly high, on account of the abundance of bacteria from which the toxin is derived. During the third week, however, the bacteriolytic forces, which have constantly been added to, begin to assert themselves, and, either on account of their in-

creased power, or a diminution in the virulence of the organism, the available supply of bacteria for the liberation of toxin diminishes. The doses of toxin then, after each bactericidal onslaught, are not so large nor so rapidly produced, in consequence of which antitoxic action becomes more apparent. A dose of toxin produces a febrile reaction, which disappears as the toxin is neutralized; the temperature rises and then falls before another dose of toxin is produced to repeat the reaction; a remittent temperature results in which the reactionary rises have a tendency to become progressively less pronounced and the periods of remission progressively longer. The temperature therefore falls by lysis.

It will thus be seen that, during the third week, bacterial aggressiveness may, figuratively speaking, be placed in one pan of a balance, and the body defenses, consisting of bacteriolysin, agglutinin and antitoxin, in the other, the remittent temperature registering the tilting of the balance-arm. The destruction of a group of bacilli and the liberation of their toxin are indicated by a rise in temperature, and the antitoxic action by a fall.

If the foregoing paragraphs may be considered as detailing the toxic-antitoxin strife as it occurs, it is obvious that the introduction of any factor which would increase antitoxin formation would minimize the toxic symptoms of the disease; while the introduction of any factor which would increase bacteriolysis or agglutination would hasten its subsidence. Both these conditions are fulfilled when dead typhoid bacilli are introduced into the body, in that the endotoxin is supplied without the necessary destruction of bacilli by the body, and the antitoxin, the formation of which it excites, produced in excess of that needed to neutralize it, becomes available to act on toxin produced from bacteria killed within the body; also the bacteriolysins and agglutinins, whose formation causes the dead bacilli in the tissues.

That this does occur when antityphoid vaccine is used prophylactically is experimentally proved; and that the use of bacterial vaccine in clinical typhoid will start a prevailing tilt of the balance in favor of recovery, Fletcher cannot help but believe from the observation of several cases. In fact the duration of fever in the majority was below the average, while the average in all cases was materially reduced. In no case in which vaccine was administered did untoward symptoms follow, aside from the expected reactionary temperature rise; and, even in cases not showing a decided result, the patients professed to feel stronger and better, and even asked that the dose be repeated.

Fletcher, in a series of 14 cases, used vaccine in doses of from 500,000,000 to 1,000,000,000 and after a study of these cases he finds that the therapeutic administration of antityphoid vaccine was attended with no bad results, and in no way increased the patient's discomfort. On the other hand, its use did, in all the cases observed, improve the general condition of the patient; while in 3 cases its action was nothing short of marvelous. In view of these facts, and granting the correctness of the hypothesis advanced, it would seem that vaccine in typhoid fever was certainly indicated.

Semple (*Lancet*) in an exhaustive review of this subject, reports on 516 cases given vaccine treatment. He says when the specific virus has been swallowed, and has gained a portal of entrance by establishing itself in the lymphatic tissue of some part of the intestinal tract, multiplication takes place, and it soon finds its way to other parts of the body, such as the mesenteric lymphatic glands, spleen, etc. From these foci it finds its way into the blood stream, and through the medium of the blood is lodged in the liver, kidneys, spleen and bone-marrow, where fresh foci of multiplication are formed. From all these foci (and possibly others) the virus is constantly being fed into the blood, where it is gradually killed off, with the result that a liberation of typhoid endotoxins takes place in the blood. The toxic condition observed in typhoid fever cases is due to the presence of typhoid endotoxin in the circulating blood.

During the early period of the disease there is a gradual rise of temperature for a number of days, varying from five or six up to ten or thereabouts, which is doubtless due to liberation of typhoid endotoxin in the blood stream. Then comes a period during which the temperature remains more or less stationary, and as a rule during this period we can obtain evidence of bacteriotropic elements in the blood.

It will thus be seen that at the very outset of its course, typhoid fever is an infection in which the micro-organisms cultivate themselves in certain tissues, and that shortly after this stage the disease drifts into a bacteremia. We have no evidence that typhoid bacilli multiply in the blood stream. On the contrary, all the evidence we possess points to a multiplication in the tissues referred to, and to a destruction in the blood stream as they are gradually fed into it. It will be seen that this condition of affairs is somewhat different from a true septicemia, where the micro-organisms cultivate themselves in the blood stream.

There are a few other facts which should be taken into consideration, viz., that the recovery from any bacterial disease, as Wright has pointed out in his studies on immunization, depends on the production of protective substances in the organism; that no one acquired protection against a disease except by the production of protective substances; and that no one can live in the presence of infection except by the aid of protective elements in his blood.

In the light of these facts, a diminution of the antibacterial substances in the blood would mean an increase in the infecting micro-organisms; and, on the other hand, an increase in the antibacterial substances would mean a decrease of infection. The temperature curve only means intoxication, and is in no way a measure of immunization. The chain of events in a bacterial infection, as Wright has pointed out, would be somewhat as follows: "An increase in the antibacterial potency of the blood leads as a rule to restriction of microbial growth in the organism, this to a diminished intoxication, and this, in its turn, to a reduction in temperature." But while it is the rule to find this inverse relation of temperature to antibacterial potency, it is certainly not the invariable rule. An excessive intoxication may condition a fall in the temperature, and it is conceivable that the rise of temperature may sometimes be directly associated with a sufficient immunizing response.

The appearance of protective elements in the blood of a typhoid patient is the result of Nature's effort to get the upper hand of the infection. This natural response which takes place when a prophylactic inoculation is carried out, viz., an increase in the agglutinating power of the serum, an increase in the bactericidal substances, together with an increase in opsonins, and possibly also several other changes as yet uninvestigated. Finally, the observations of Wright and Lamb on the distribution of the agglutinins in the organism in the case of typhoid and Malta fever, and the more recent observations of Wright on the diminution of bacteriotropic substances in the sites of local infection, would indicate that in typhoid fever the infecting microbes are cultivating themselves in regions where the bacteriotropic pressure is lower than in the general blood stream—a condition of affairs somewhat resembling localized bacterial infection.

The first question that confronts us when recommending the use of vaccines during an attack of typhoid fever is the question whether it is likely to increase the toxic condition of the patient.

In the disease itself the toxic condition is produced by the substances in the bacterial protoplasm (or endotoxins), as these substances are liberated from the broken up or lysilized typhoid bacilli which are being fed into the blood stream from the foci of infection.

When dead typhoid bacilli (or vaccines) are injected into the tissues, it is the products of the metabolism of the bacteria which act; and these products are the results of the action of the tissues at the seat of injection. Here we get a localized toxic effect on the tissues, and a consequent local production of bacteriotropic substances, which find their way into the blood. On the other hand, when, as during an attack of typhoid fever, the bacteria are broken up in the blood stream, the liberated toxin is diluted by the whole volume of the blood, and served out to the tissues in such a diluted form as only tardily to give rise to an immunizing response. In such a condition we get the full toxic effect, but only a slow immunizing effect, and although immunity does eventually come about, this is not the quickest way to obtain it.

If it is accepted that bacteriotropic substances are elaborated locally at the site of injection of bacterial vaccines, it follows, as Wright has pointed out, that the toxic substances in the vaccines are held back in the tissues where they are injected. If this is the case, vaccines injected into the tissues must give rise to less intoxication than a similar amount injected into the blood stream. Their efficiency does not depend on their toxic effects, but on the reaction they set up in the tissues, and the consequent production of bacteriotropic substances. By this means it is possible, as Wright has put it, "to exploit in the interest of the infected tissues the unexercised immunizing capacities of the uninfected tissues."

Russell, in his explanation of how typhoid vaccine is beneficial in typhoid fever, adheres to the views put forward by Wright. He holds that "the subcutaneous tissue produces antibodies freely, and that, as it is not ordinarily involved in typhoid fever, subcutaneous injections of vaccines in this disease do good by throwing this unused centre into action."

The local elaboration of antibodies as the result of the subcutaneous injection of antigens is not universally accepted. Hektoen has recently carried out experiments in dogs, from which he concludes, "that the tissues at the site of injection of antigen do not take any measurable part in the production of antibodies."

Whether we accept any of the foregoing explanations or not, we cannot get away from the fact that the vaccines, in quantities sufficient to stimulate an increased production of bacteriotropic substances, can be injected hypodermically into patients suffering from typhoid fever without adding in the least to their toxic condition. This, in a few words, is the crux of the whole question.

There is no uniformity among experimenters regarding dosage and routine. Some give daily doses and others inject every other day. Semple gives 100,000,000 bacilli to begin with, and gradually increases up to 200,000,000 to 300,000,000, and leaving an interval of from twenty-four to forty-eight hours between each dose. As to the method of injection the intramuscular is more painful and the subcutaneous is to be preferred. The front of the chest, 4 inches below the clavicle, is the best site of injection.

Semple, who has proved a most careful observer, concludes his observations as follows: (1) The treatment of typhoid fever by means of vaccines rests on a sound theoretical basis, as proved by the increase of protective substances in the blood of patients undergoing treatment. (2) If any reliance can be placed upon a limited collection of figures, vaccine-therapy treatment is a practical method by which we can lower the death-rate, diminish relapses, and lessen complications in typhoid fever. (3) The treatment is devoid of all risks, and can be easily carried out, and to the best advantage by any physician with a knowledge of bacteriology, and the leading facts connected with immunization; a knowledge of the blood changes which take place during bacterial infections, and as the result of the injections of bacterial vaccines; and, finally, a knowledge of the methods employed in measuring the protective substances in the blood. (4) The results already achieved indicate that it is a method of treatment worthy of the serious attention of those who are called upon to treat typhoid fever.

Sadler (*Jour. Vaccine Ther.*) in writing on contraindications believes that no injection of vaccine should be made within twenty-four hours of hemorrhage from the bowel. If perforation is suspected vaccine should not be given. Chantemesse suggests nucleinate of soda. The milder the case, and the earlier vaccine is used, the more satisfactory are the results. Subject to the two contraindications, vaccine treatment is well worth trying. No improvement is to be expected after the initial dose till the third or fourth day, when the patient will usually feel better and in many cases complain of hunger. The improvement after the second and subsequent injections often comes on the second or third day. There is frequently a "negative phase" after the injections, but it is not always shown so clearly.

One of the most interesting problems in typhoid was in connection with typhoid-carriers, *i. e.*, the persistent elimination of bacilli for years after recovery, and during an interval when the individual shows increased resistive powers by methods calculated to measure his state of immunity. Such immunity, which may be designated as partial or incomplete immunity, is in all probability sufficient to protect the body-cells against the damaging influence of the infection, but insufficient to exert any destructive or antagonistic power directed toward eradication of such infection. In other words, the phagocytic power may be higher than normal, while the bacteriolytic and bactericidal powers may be low. In practically all reports of typhoid carriers such individuals were not seriously inconvenienced by the presence of the infective agent which earlier, before partial immunity was established, produced manifestations of the disease. According to Park, in most chronic carriers, the bacilli are eliminated with the feces, while the urine contains the bacilli in a relatively smaller number.

Connell regards the bile as the medium in which the bacilli perpetuate themselves. He regards the feces as a greater source of danger during the active stage of the disease, and the urine as the greater spreader of the disease during the decline and post-febrile stage. Forster believes the gall-bladder to be the site of constant reproduction of the bacilli, which are intermittently ejected into the intestines; a view also held by the Ledinghams, since investigations have shown that the bacilli may disappear during convalescence, only to reappear several months later.

Typhoid-carriers who become such through association with the disease, "contact carriers"—and such instances are not uncommon among nurses and orderlies who themselves have not had typhoid to their knowledge—likewise show tolerance to the presence of the germs without inconvenience. Their tolerance is probably to be explained as due either to a natural immunity or to partial immunity from an earlier unrecognized mild typhoid infection. From this standpoint it is not illogical to assume that the measure of immunity which protects the individual, during and subsequent to attack against the infection itself, is to be found largely in those antitropic substances which are concerned with an augmented power of phagocytosis; while lowered antibacterial substances, such as the bacteriolysins and bactericidins, permit the infection to persist for years in the individual without serious damage to himself, but without eradication of the bacterial elements. The history of typhoid-carriers varies greatly. In most instances they have been discovered in hitherto unexplainable endemic outbreaks among the inmates of asylums or among families who have happened to employ the same cook or obtained milk from a dairy previously under suspicion because of its possible connection with earlier endemics. A larger number of typhoid-carriers, in the sense that they have been the cause of endemics,

have been women who have in some way been connected with the preparation or handling of food products.

So-called urinary and intestinal antiseptics such as phenyl salicylate (salol), sodium phenolsulphonate and hexamethylenamine have been found to possess little value in the treatment of chronic typhoid infection. Treatment by autogenous or stock bacterial vaccines seems to offer more chance of success. A stock vaccine is quite as efficient as vaccine prepared from recently isolated autogenous strains. On the other hand, for various reasons, it is probably better to use a vaccine prepared from the patient's organisms. Stone's conclusions are (1) the time element is an important factor in the reaction of susceptibility to inoculations of bacterial vaccines in typhoid-carriers. Typhoid-carriers, injected within a comparatively short time after their infection, will in all probability, receive more benefit from properly prepared autogenous vaccine than from any other known form of treatment. (2) "Contact carriers," who never to their knowledge have had typhoid, are more susceptible to the inoculations than carriers who have had a definite attack of this disease, and who are in all probability more immune. (3) Where the infection has persisted for years, it may be difficult to clear up the condition by bacterial inoculation. This effort should at least be made, since in the somewhat similar condition—chronic carriers of apparently non-virulent tubercle bacilli—the bacilli often disappear from the sputum during a course of inoculations of some one of the tubercle products. (4) The immunity manifested by typhoid-carriers is in all probability a partial immunity in the sense that while these individuals are protected against the infection through an augmented phagocytic power held by their body-cells, the antibacterial substances such as the bactericidins and lysins are lessened to a degree insufficient to exert any destructive power against the infection.

Psychology in Medicine

The subject of psychology and its relation to the art and science of medicine is attracting an increasing amount of attention among physicians. That the mind exercises great influence over the purely physical body every one recognizes and it is therefore necessary for medical practitioners to ascertain just what are the limitations of the science of the mind in its relationship to the body and the diseases affecting it.

The association *Journal* of March 30, devoted an unusual amount of space to an examination of psychology and its connection with the various branches of medicine. So interesting were the discussions that an epitome is herewith presented:

S. I. Franz, of Washington, said that psychology has, within the last few years, attained a place in the scheme of medical education, though mental states are discussed often under different names. He said that psychology is a science independent of physiology and, no matter what branch of medical practice is considered, mental states must be taken into account by the practitioner. Many of the so-called nervous diseases are really mental, and a more intimate acquaintance with the facts of psychology and psychotherapeutics is needed. While this is specially true in mental disorders properly so-called, it is also of value in the treatment of other diseases, but many practitioners still hold inadequate ideas on this point. It is also not sufficiently appreciated as yet in relation to medical research. He thinks that the time given to pathology and pathologic anatomy in institutions for the insane and defectives is still rather out of proportion to the psychologic investigations which should be made. The exact kind of psychologic work to be done is questioned by some and he thinks it appears that the ideal proposed is that it should be a hybrid between the present laboratory psychology and medical practice, but the type that is needed is one that can be used practically by persons who may not be thoroughly trained investigators. Much of the success of the followers of Christian Science, mind cures and other fads has been due to their recognition of the psychologic factors in mental life reached by unscientific individuals without special training. Those who have charge of medical education must see to it in the future that the qualifications of their graduates have at least an elementary knowledge of mental processes.

Psychology for Medical Students.

J. B. Watson, of Baltimore, is interested in the subject as a proper branch in which to instruct medical students. He is of the opinion that psychology is ceasing to be a purely academic science, but a good deal of the recent research work is not of special practical value for the medical man. Still, psychology has not been given the credit which is due it, and the methods used by Freud and Jung have certainly been borrowed from psychology. The psychoanalyst of to-day is too apt to assert his independence of psychology and is using methods in a rather crude and unsatisfactory way. He believes that normal psychology can offer to medicine tools which its students can fashion to suit their special needs and a satisfactory common terminology. He points out certain difficulties in the way, the disparity in the psychologic training of the medical men and the way in which anatomy, and especially neurology, and physiology are taught in the schools. There must be some change in the ideals which will make the student feel his need of psychologic training. He would have a course with three periods each week, two laboratory periods of two hours each and one lecture, the course to continue for one full year and represent the minimum devoted to psychology in the medical schools. He specifies the different courses in sensation and mental tests to be followed by the study of the normal processes of association, memory and retention. The course should also contain a few lectures and several experiments on normal reaction time, and with this foundation he thinks we may safely turn the medical student interested in psychopathology and psycho-analysis over to the psychiatric clinic. He believes that a manual dealing especially with this line of study for the medical student will be forthcoming, though none now exists.

Psychology in Psychiatry.

It is to be assumed that the study of psychology in mental diseases would show its exceeding value. Adolph Meyer, of Johns Hopkins psychiatric clinic, believes that as psychiatry has to deal with the mental facts presented by the patient, it is desirable or even essential that we should use such methods and standards as will be recognized in the scientific observation of mental facts generally. The chief facts to-day, are that the division between psychoneuroses and insanities has become less marked among the students of mental disorders, and psychopathology has become the scientific definition of psychiatry generally, thus recognizing the importance of psychology, though a number of workers are inclined to underestimate the laboratory methods. Meyer brings the two types of study on to a common coöperative ground. To physicians psychopathology and psychology call for a use of the biologic settings and a definite setting up of the mental dynamics, and also of the non-mental dynamic factors. To his mind, psychopathology and psychology have to study mental events and their settings and their effects in terms of activities or behavior. There are many lines of psychologic research which the medical student will learn to take up with interest. As long, however, as he makes it a rule as far as possible to record events together with their underlying conditions and their results, sizing up the time and influences needed for a readjustment of a state of balance, the worker is on the safe side and sure to record valuable material, no matter how complex the facts may be when subjected to detailed analysis in terms of structural psychology. His view is that psychology will become a much

more real issue when it aims to guide students in the correct and critical recording of the plain facts of conduct and behavior and the mechanisms at work; when it puts the emphasis on what shows objectively as well as subjectively, namely, the conditions, types and results of mental activity; "when it trains the student to see, in the special psychologic methods, methods of accuracy and greater comparability; but, above all, when the data can be formulated in terms of adaptations of a living functioning organism with the system of mental integrations—the conditions and structure of which are becoming increasingly better understood. The student should learn that psychology is the study of a certain type of reactions, of the conditions under which they occur, of what they do and how they can be modified and kept from miscarriage. How to use the reactions either as mere signs of broader disorders or as dynamic factors must be learned in the study of cases and by experimentation." He objects to the teaching of abstract systems of psychology to the medical student illustrated by parade cases of the literature and leaving them with dyspepsia when confronted with our plain hospital cases. It is equally needless to describe psychopathology as "applied psychology." It can be a legitimate and fruitful field for psychology at its best. "On this ground it would seem desirable to have a member of the staff in psychopathology add to the course on psychology an outline of psychology of normal life, and to the course in pathology an outline of psychopathologic fundamental experiments and reaction-types, so that when psychiatry is introduced the student has a first-hand experience with the fundamental facts and methods."

Psychopathology.

E. E. Southard, of Cambridge, Mass., in discussing the question, how shall research psychology and research medicine come together, on what ground and to what ends, insists strongly on the unique value of the pathologic method, not merely for the diagnostic and therapeutic purposes of medicine, but for biology as a whole and for the most vital of biologic sciences —psychology. He also wishes to point out how pernicious in research may be the dogmatic insistence on the doctrine of psychophysical parallelism in medical or premedical courses in psychology—pernicious, he says, because it prevents the free interchange of structural and functional concepts and the intercourse of workers in the several sciences. He wishes to show that psychology and physiology have more in common than either has with structural sciences like anatomy and histology and that the main common element of mental and cerebral processes is the time element as against the space element of the structural sciences. Hence he holds that the mind-twist and brain-spot hypotheses for the explanation of certain forms of mental diseases are consistent with each other, each dealing with the same facts from a different angle, and, above all, he says: "Let us not divide up the tasks of research as we divide up the tasks of teaching, since research looking to the future defies the compartment of the past." He quotes from William James as to the better understanding we have of a thing's significance by considering its exaggerations and perversions and its other relations and equivalents, and the advantage that the study of insane conditions, as isolating special factors of the mental life, for the study of the phychologists. The use of abnormal material often gives a short cut to the explanation of normal processes. He considers the school tendencies born of the doctrine of psychophysical parallelism as especially dangerous. Function and structure are closely related to each other and should be studied together, not as by an absolute interactionist, because we do not know thoroughly the factors that interact. We should let the facts, however, lead us wherever they tend and recognize the common aspects of brain changes and mind changes so far as they exist.

Therapeutics and the New Psychology.

Psychology plays an important part in the Emmanuel treatment, which has been in vogue in Boston, but its importance as a branch of the medical curriculum is not especially apparent to Morton Prince, of Boston. He feels that normal psychology has no particularly close relation with the problems of medicine, particularly psychotherapy. He does not say it is useless, but for the most part it does not clear up the medical problems included in pathologic processes and practical therapeutics. In order to make psychology applicable to medical problems, it should explain the facts, give the why as well as the how and what. The processes which are involved in pathologic disturbances, Prince says, are just those which have been neglected in normal psychology. The psychologic teaching has left to the unprofessional psychologist, the physician, the task of searching out the mechanisms concerned in the abnormal manifestations with which the physician has to deal. He gives the idea of what sort of psychology should be taught to meet the requirements of medicine, and particularly of therapeutics, as follows: "1. A study of the subconscious (whether regarded as psychical or physiologic) in all its relations. This embraces the content of the subconscious as the storehouse of conserved experiences, the influence and mechanism of the subconscious in determining conscious and physiologic process; its incubation; its automatic manifestation—motor and sensory; its syntheses, dissociations, etc. 2. The phenomena of hypnosis and allied conditions. 3. Suggestion and its phenomena. 4. Memory as a process (as distinguished from its content and phases) and the part played by this process in conscious and subconscious activities. 5. Amnesia and its mechanism. 6. Fixed ideas, conscious and subconscious. 7. The dissociations and syntheses of "personality" and their mechanisms. 8. The emotions and feelings as forces which determine conscious and subconscious processes, dissociations, syntheses and activity, and which control the visceral functions of the body. 9. The emotional instincts as impulsive forces which determine mental activity and conduct. 10. The sentiments as complexes of ideas and emotions, and the part played by them in determining so-called personality and reactions to the environment. 11. Phenomena of repression, resistance, conflicts, inhibitions, etc. 12. The mechanisms of thought. 13. Complex formation. 14. The influence of complexes as conscious and subconscious settings or contexts in determining judgments, attitudes of mind, point of view, the meaning of perceptions, etc. 15. Associative processes and reactions, including word and galvanic reactions. 16. Habit processes. 17. Automatisms. 18. The mechanism of dreams. 19. The influence of the mind on the body. 20. Fatigue." This, he says, is a rough and incomplete summary of the psychologic knowledge which, in his opinion, should be included in the medical course, but it will do for a beginning.

Lymphatic Leukemia.

C. E. Holzer, Gallipolis, Ohio (*J. A. M. A.*, May 25), reports a case of leukemia with somewhat unusual features occurring in a man 64 years old with an indefinite family history of paternal leukemia and tuberculosis in two sisters and without definite history of previous illness except the usual ailments of childhood. In March, 1910, he had a persistent cough without expectoration and noticed dyspnea on exercise, both of which symptoms became progressively worse. For two months prior to examination he had pain at the roof of the neck and difficulty in swallowing. He had been gradually losing weight for a year and growing weaker for six months past, but was able to work until about two months before death. In the last month before death he had slight elevation of temperature at irregular periods and several brief delirious attacks. Digestion and appetite were fair. Dizziness was frequent and vision somewhat failing. He died from exhaustion on March 19, 1912. The points of interest in the case as shown by autopsy were the following: "1. Gland hyperplasia confined to mediastinal and mesenteric glands. 2. Comparatively low white count. 3. High percentage of lymphocytes and correspondingly low per centage of polymorphonuclears. (No case found in literature in which the polymorphonuclear percentage was as low as 2.2). 4. Case apparently purely lymphatic, no evidence of the myelogenous type, either enlarged spleen or myelocytes."

Diet, Hygiene and Nursing

BACTERIOLOGY.*

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PART IV.

(*Continued from p. 216, July.*)

6. Closets, kitchen and hallway sinks, etc. The closets should never be used for discharges until they have been thoroughly disinfected, if it can be avoided; if done, one pint of carbolic solution should be poured into the pan (after it is emptied) and allowed to remain there. Sinks should be flushed at least once daily.

7. Dishes, knives, forks, spoons, etc., used by a patient should, as a rule, be kept for his exclusive use and not removed from the room. They should be washed first in the carbolic solution, then in boiling hot soapsuds, and finally rinsed in hot water. These washing fluids should afterwards be thrown into the water closet. The remains of the patient's meals may be burned or thrown into a vessel containing the carbolic solution or milk of lime, and allowed to stand for one hour before being thrown away.

8. Rooms and their contents. Rooms which have been occupied by persons suffering from contagious disease should not be again occupied until they have been thoroughly disinfected. For this purpose either careful fumigation with formaldehyde gas or sulphur should be employed, or this combined with the following procedure: Carpets, curtains and upholstered furniture which have been soiled by discharges, or which have been exposed to infection in the room during the illness must be removed for disinfection to chambers where they can be exposed to formaldehyde gas and moderate warmth for twelve to twenty-four hours, or to steam. Some carpets, such as many Wiltons, are discolored by moist steam. These must be put in the formaldehyde chamber. Woodwork floors and plain furniture must be thoroughly washed with the soapsuds and bichloride solutions.

9. Rags, cloths and articles of small value which have been soiled by discharges or infected in other ways should be boiled or burned.

10. In the case of death the body should be completely wrapped in several thicknesses of cloth wrung out of the carbolic or bichloride solution, and when possible placed in an hermetically sealed coffin.

It is important to remember that an abundance of fresh air, sunlight and absolute cleanliness not only help protect the attendants from infection and aid in the recovery of the sick, but directly destroy the bacteria which causes the disease.

For the disinfection of rooms, either formaldehyde or sulphur dioxide gas is used. To kill germs, such as those of typhoid fever and tuberculosis, five hours exposure to formaldehyde gas is required. Twelve ounces of formalin for each 1,000 cubic feet of air should be used. Of sulphur four ounces should be burned for every 1,000 cubic feet to be disinfected with eight to twelve hours' exposure.

Remember, however, that disinfection by means of gases in rooms is very superficial. The gases do not penetrate far below the surface of materials.

The Disinfection of Hands, Instruments, Ligatures and Dressings for Surgical Operations.

(Here again I quote largely from Park's Bacteriology.)

Instruments: All instruments, except knives, after having been thoroughly cleansed are boiled for three minutes in a 1% solution of washing soda. Knives, after having been thoroughly cleansed, are washed in sterile alcohol and wiped with sterile gauze and then put into boiling soda solution for one minute. This will not injure their edges to any great extent.

Gauze: Gauze is sterilized in moist heat either in an Arnold steam sterilizer for one hour or in an autoclave for thirty minutes. It is placed in a perforated cylinder or wrapped in clean towels before putting it in the sterilizer, and only opened at the operation. Iodoform gauze is best made by sprinkling sterile iodoform on plain gauze sterilized as described above.

Ligatures—Catgut: Boil for one hour in alcohol under pressure at about 97° C. It is often put in sealed glass tubes, which are boiled under pressure. These remain indefinitely sterile. The alcohol does not injure the catgut. If desired, the catgut can be washed in ether and can be soaked a short time in bichloride before heating in alcohol. Silk wire, silk, silkworm gut, rubber tubing and catheters are boiled the same as the instruments.

The Skin of the Patient: This is washed thoroughly with warm green soap solution, then with alcohol, and finally with 1-1000 bichloride. A compress wet with a 25% solution of green soap is now placed on, covered with rubber tissue, and left for three to twelve hours; and after its removal the skin is washed with ether, alcohol, and bichloride solution, and then covered with a gauze compress previously moistened with a 1-1000 bichloride of mercury solution. At the operation the skin is again scrubbed with green soap solution followed by ether, alcohol, and then with the bichloride of mercury solution. In some places the bichloride compress is replaced one hour before the operation by a pad wet in 10% solution of formaldehyde.

The Hands: Furbinger's method, slightly modified, is now much used, and gives good results. The hands are washed in hot soap and water for five minutes, using the nail brush. They are then soaked in alcohol for one minute and scrubbed with a sterile brush. They are finally soaked in 1:1000 bichloride of mercury solution for three minutes. Another method which gives good results is as follows: Skin of operator is scrubbed for five minutes with green soap and brush, then washed in chloride of lime and carbonate of soda in proportions to make a good lather; washed off in sterile water; and then scrubbed with a brush in warm bichloride solution 1:1000.

Sterilized rubber gloves are now being used more and more in operations. The gloves can be sterilized by being left for one minute in boiling 1% soda solution, or they can be sterilized by steam.

The surgeon's gowns and caps are sterilized by steam. Mucous membranes, as those of the mouth and throat, are cleansed by a solution consisting of equal parts of peroxide of hydrogen and lime water. In the nostrils it is better to employ the milder solutions, such as diluted Dobell's or listerine.

These are also used in the mouth instead of the peroxide.

The vagina is swabbed out thoroughly with sterile warm soap and water, and then irrigated with a 2% carbolic acid or 1:1000 bichloride of mercury solution.

Hypodermic syringes and other syringes when not boiled are sterilized by drawing up into them boiling water a number of times and then finally a 5% solution of carbolic acid, the acid after three minutes to be washed out by boiling water. If cold water is used the carbolic solution should remain in the barrel for ten minutes. Great care should be taken to wash out all possible organic matter before using the carbolic acid or boiling to sterilize. Syringes made entirely of glass and asbestos can be boiled in soda solution.

Skin sutures must not be closely placed in fat subjects. Provision should be made for the escape of fat droplets.—(*Am. Jour. Surg.*)

Osteomyelitis of the long bones in children originates in the ends of the diaphyses—rarely as a periostitis and principally attacks the weight-bearing bones.

* Lecture delivered before the nurses of Lebanon Hospital, N. Y.